Telephony.

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WORK!

Get out and do something—work, sweat, hike, hump yourself—starve if need be—but dig on and deliver. Then talk if you want to, but the chances are you won't feel so much like it.—James Howard Kehler.

The Telephone in Time of Disaster.

Elsewhere in this issue Telephony reproduces a few of the scores of newspaper clippings which came to this office during the recent floods in Ohio and Indiana, showing what a vital part the telephone played in that time of disaster and wreck. For days, in many localities, the telephone was the only means of communication between the flooded district and the outside world. When that wire snapped the district was completely isolated.

On another page this situation has been symbolized by Telephony's artist. The lone operator, her switchboard submerged, her companions gone, the building crumbling, mounts to the roof and, cutting into the single remaining circuit, sends out her dire news to a waiting world. This, or its equivalent, occurred not in one, but in many places throughout the afflicted region. Deeds of heroism were performed by telephone employes of both sexes, history thus repeating itself as it has done countless times before.

Employes' Technical and Social Clubs.

A movement which is spreading rapidly among Independent telephone companies everywhere is that looking to the organization of clubs by the employes. A club, composed of employes and officers of a company, meeting regularly, and interspersing practical discussions of the telephone business with musical and vaudeville programs, dances, picnics, etc., is undoubtedly one of the most potent factors in the cultivation of a co-operative feeling and in the stimulation of loyalty to the organization, which it is possible to conceive.

Wherever clubs of this kind have been formed they have immediately demonstrated their practical value. They link closely the employe and the employer, they bring to the former a broader conception of his or her work; they afford an opportunity for an exchange of ideas which is invaluable to the man or woman in the ranks.

And the social feature of the club is another of its strong points. It is astonishing to discover, when an earnest search is made, how many musicians of real merit—how many unknown Julia Marlows and Henry Irvings—there are in a miscellaneous aggregation such as the club brings together. Talent develops on every hand and it requires little effort to stage an entertainment really well worth while when it is once undertaken in a business-like, systematic manner.

All in all, therefore, the club makes for a more intimate relation between the company and its employes; it strengthens the personnel of the force; it pays dividends out of all keeping with the time and money expended in its promotion.

The Value of Saving Material.

In telephone exchanges there is always an opportunity for the careful employe to reduce the expenses of the company by careful use of material and supplies. Carefulness in cutting wire from the coils for a certain piece of work will eventually amount to considerable in time. One company has saved many dollars by keeping a record of short pieces of wire for use on the cross connecting frames. The short pieces of wire can generally be utilized at some time or other but few workmen will take the time or have the inclination to obtain such pieces. They prefer to cut a piece, somewhere near the length they wish, from a new coil. After the work is done the scraps or short pieces are thrown away.

If employes knew the value of wire and other supplies, they would not be so free in their use. Every department can save, some more than others. Carefulness in ordering material from stock such as lengths of lead covered cable, switchboard cable wire, insulators and hundreds of other items which have a considerable money value in the aggregate is one of the ways in which a saving may be affected. The careful use of this material by the employes concerned is another.

Watch Out for the Man Behind

By HERBERT KAUFMAN

Today is yours, but tomorrow belongs to The Man Behind. He's back there pushing and struggling and fighting on—he's gritting his teeth and keeping in action, so he's in better shape than you—the exercise of effort is keeping him alert—thinning down his limbs—pasting his muscles tighter to the bone—twisting gristle into the meat—look out for him! You haven't worked at full vigor of late. There's an overcoat of fat growing around your intellect—if he ever gets up to you, and it comes down to a stern, hard contest, you won't last. Activity doesn't tire—it hardens—gives resisting power—develops the wind—teaches one to stay when the tussle becomes intense. There's many a man in your office carrying the undeveloped seed of achievement in his make-up. He's fertilizing it with his ambition and some day results are going to grow out of it. See to it that you get the harvest.

The time may come when you'll need loyalty as badly as the Texas bad-man needed his "Colt." He left it at home on the piano, but the sheriff couldn't afford to overlook the chance of getting him at a disadvantage.

Your competitors are always watching and waiting—they're seeking an opportunity to "get in." You may have to rely for survival upon the fidelity of the man behind. You won't get it if you haven't earned it. There are two sides to every question and like the flap-jack—the bottom gets on top in the turn over. Your staff only owes you that which you have bought. If you've taken advantage of circumstances in his hour of weakness, depend upon it, when somebody else offers him more money, no man in your employ will stick—he isn't in your debt by one throb of consideration. Lack of appreciation is the incubator which has hatched thousands of employes into employers. Injustice has driven into independence half the successful men in America.

Forests die out unless there is a constant growth of saplings—they can only be perpetuated by the seeds which drop from the trees that have already grown up. Don't forget that your young men are seed—that they are your insurance against the future—that you must look to them for the timber of tomorrow. Take care of them. You may not need them now, but as the years pass and your own powers fail, and you can no longer stand the gaff as today, the skill and knowledge and confidence which you breed into those surrounding you now, will protect your past efforts and warrant the continuance of prosperity for your family.

Hold on to your sound boys—they're worth more to you than anyone else, because they are more valuable to every other employer than you. When they go away they are like bees, covered with fructifying pollen—they fly off with the ability they gained from you, and use it against you. When they enter another office, they handicap you by their withdrawal and strengthen your rivals with their knowledge of your secrets. When you replace them, you must pay as much for their successors, break them in and afterwards give battle to the very strength that you allowed to desert your flag.

Carnegie is giving away libraries because he was shrewd enough to make every potential antagonist a partner. He drove his bargains when their strength was not at its fullest pitch, and he put them under the yoke of mutual interest while their brains were freshest and could tone up his staling view-point—he made his own percentage smaller, but he magnified his total profits so tremendously that a part of twenty men's earnings far exceeded what his lone efforts would have brought, had he tried to hog it all.

A small interest at an early enough moment creates a lifetime ally—it buys you a man's play-time and night-time thoughts, all his plans and ambitions. It creates a burden-sharer who will lift cares, the shifting of which is worth far more than the cost. It gives you a sense of future security, unknown to the lone operator, who lives in the constant dread that he will be hardest pressed when he is least efficient.

Copyright by Herbert Kaufman.

Portland Home Operating for 45 Per Cent. of Gross

Annual Report of Oregon Independent Shows Gains in Earnings, Extent of System and Number of Stations—Had 13,666 Telephones Connected at Close of 1912, as Against 12,295 for 1911, a Gain of 11.15 Per Cent—Analysis of Plant's Operations

The annual report of the Home Telephone & Telegraph Co., of Portland, Ore., has just been given out. It is particularly interesting as showing in plentiful detail the progress which has been made under the present management.

Gross income for the year ended December 31, 1912, was $363,911, being $8,630 higher than for 1911. Expenses were $164,160, or $27,856 greater than the year before, but it is pointed out that unusual expenses arose in 1912, of which approximately $20,000 were due to the "silver thaw," in January of that year, which did enormous damage to all the wire companies in that section. Other unusual expenses were about $3,500 for advertising and accident liability of $2,500.

In spite of these unexpected charges, the operating expense of the company was but 45.11 per cent. of the gross income. This compares with an operating revenue for 1911 of 38.36 per cent., which the management considers about normal for its property.

There were 13,666 telephones in service at the close of the year, as against 12,295 at the end of 1911, a gain of 1,371, or 11.15 per cent.

The condensed statement of earnings and expenses is here shown, as well as the balance sheet and other data, constituting a close analysis of the performance of the property for the past three years.

Attention is called to the fact that no depreciation fund has yet been created, owing to the fact that the plant is comparatively new and that it has been maintained at a high state of efficiency. Provision is now to be made for such a fund, however.

In his report to the stockholders, Samuel Hill, president of the company, briefly summarizes the early history of the organization, and then continues, in part, as follows:

"Your present board of directors, Samuel Hill, Theo. B. Wilcox, William M. Ladd, Edward Cookingham, A. L. Mills, Henry L. Corbett, Elliott R. Corbett, Eben F. Wells and J. C. Potter, assumed the management of the company's affairs October 5, 1909.

At that time there were 9,600 telephones in operation. Due to lax and inefficient methods of conducting the business, there were more than 400 telephones not producing revenue to the company. Today there are 13,700 telephones in service, and all are in good standing.

In October, 1909, your directors found the company in imminent danger of being thrown into the hands of a receiver at any moment; today it is in a sound, solvent condition, without a dollar of floating debt.

Your board of directors has met the sinking fund requirements of the bond mortgage promptly each year for the past three years, when same became effective, and under instructions of the board of directors, the treasurer has set aside and deposited in the bank each month funds sufficient to meet the interest on outstanding bonds.

The voting trust agreement expired January 1, 1913, and the stockholders are now in possession of the property and management of the company.

I may say in addition to what the manager's report shows, that it is conceded by competent men that you are in possession of an automatic telephone system second to none in the United States in its ability to render efficient telephone service, and this has been brought about, first of all, by the fact that the board of directors have given the affairs of the company extraordinary attention, and the employes of the company have seconded their efforts by efficient, loyal and intelligent service.

To those of you who have not visited the plant and examined its methods, it may interest you to know that, out of the 13,700 telephones in service, there is an average number of only 11 cases per day where the service shows an interruption. In other words, each day only 11 of our subscribers experience any inconvenience, and the majority of these cases arise from circumstances beyond our control, as for example, breakage of the lines, boys shooting holes in cables, and other like interruptions, the percentage of delays amounting to a little less than one-tenth of 1 per cent.

The information department is so complete as to be a source of surprise and pleasure to all who use it.

Revenue Account

REVENUE.

	1910	1911	1912
Rentals	$327,592.80	$347,452.24	$356,177.96
Toll commissions	6,171.92	5,631.89	4,422.57
Miscellaneous	1,786.35	2,197.03	3,310.70
	$335,552.07	$355,281.16	$363,911.23

EXPENSES.

General (including taxes)	56,332.27	66,092.07*	73,228.26†
Maintenance	30,042.94	32,522.65	51,937.94‡
Operating	39,221.54	37,689.59	38,993.95
	$125,596.75	$136,304.31	$164,160.15
Net revenue	$209,955.32	$218,976.85	$199,751.08
Interest	123,320.09	115,852.84	128,979.27
Surplus	$ 86,635.23	$103,124.01	$ 70,771.81
Spent for extensions and betterments	75,318.27	133,357.04	182,075.59

PERCENTAGES EXPENSES TO EARNINGS.

General (including taxes).	16.79%	18.60%*	20.12%†
Maintenance	8.95%	9.15%	14.27%‡
Operating	11.69%	10.61%	10.72%
Total expense	37.43%	38.36%	45.11%
Telephones in service December 31	11,506	12,295	13,666
Inc. over prev. year	1,151	789	1,371
Percentage of increase	11.12%	6.86%	11.15%
Aver. number in service	11,115	11,890	13,010
Aver. revenue per telephone per month	$2.5158	$2.49	$2.33097

DISTRIBUTION OF REVENUE PER TELEPHONE PER MONTH.

Average Expense per Telephone per Month:

General (including taxes).	.42235	.46321*	.46905†
Maintenance	.22524	.22794	.33268‡
Operating	.29406	.26416	.24977
Total expense	.94165	.95531	1.05150
Av. Int. per Tele. per Mo.	.92457	.81198	.82615
Av. Surplus per Telephone per month	.64953	.72276	.45332
	$2.51575	$2.49005	$2.33097

*Includes unusual increase over previous year of:
Taxes of approximately $9,000.00

†Includes unusual increase over previous year of:
Advertising approximately 3,500.00
Accident liability approximately 2,500.00
Total $6,000.00

‡Includes unusual charges account of "Silver Thaw" in January, 1912, of approximately $20,000.00

Balance Sheet.

ASSETS.
As of December 31, 1912.

Plant	$2,632,022.40
Franchises and contracts	2,664,460.00
Bond discount	177,315.00
Investments (includes plants at Albany, Corvalls, Oregon City and Independence, Oregon)	159,760.00
Bills and accounts receivable	27,925.82
Cash on hand and in banks	45,974.19
Total	$5,707,457.41

LIABILITIES.

Bonds outstanding	$2,644,600.00
Stock outstanding	2,674,133.33
Bills and accounts payable	14,279.96
Bond interest accrued	29,513.27
1912 Taxes (not due)	21,858.73
Surplus	323,072.12
Total	$5,707,457.41

The record department is so efficient that during the last two years no error has been called to our attention, either in the printing of a subscriber's name or number, or of an omission from the telephone directory.

All departments of your company are working in perfect harmony, and for the building up of your business.

The net earnings of your company, which properly should have gone to the stockholders as a return on their investment, have been expended in improvements, betterments and extensions, that the efficiency of the plant might thereby be increased. It is believed the time has now arrived when the credit of the company has become established, and the earnings, which the stockholders have loaned to the company, can be returned to them in the form of a dividend.

The one great need of the company is to bring to the attention of the public the value of the service rendered, and the fact that there is no such service rendered in the United States at a like cost.

The cordial reception which those using the service rendered by your company have everywhere given it leads us to expect that, with the same efficient management now existing, the business of your company should show a continued and satisfactory increase."

The report of J. B. Middleton, manager of the Home company, shows that exchanges are operated at Portland, Oregon City, Albany and Corvallis, all in Oregon, and all of which showed gains in number of stations connected. In conjunction with the Postal-Telegraph Cable Co., long distance service has been established with Eugene, Medford and Ashland, in Oregon. Long distance business is also handled by the Northwestern Long Distance Telephone Co. The latter is now in the hands of a receiver, but it is believed that it will not fall into unfriendly hands when sold, or, if it does, that the existing arrangements will not be disturbed.

Telephone affairs in Oregon are under the supervision of the Railroad Commission, which, it is held, will effectually safeguard the interests of the Home company. In conclusion Mr. Middleton says:

"The revenues of a telephone company are stable, and with the supervision of the Railroad Commission of Oregon, and in anticipation that the national government, now investigating the telephone situation, will protect capital invested therein, and with rates less than those charged by our competitors, and with a public coming to understand that your company is no part of a monopoly, but a true competitor, there is no reason why this company will not continue to grow and prosper.

"In accordance with provisions of our franchise, we are entitled to charge our subscribers rates in excess of present ones (which would still be less than those charged by our competitors), but as yet we have not availed ourselves of this privilege."

Telephone Company Dines Employes.

"You may depend upon the fact that this company is strictly Independent and that it is going to remain so," said Vice-President A. L. Mills, of Portland (Ore.) Home Telephone & Telegraph Co. at the third annual banquet resently given by President Samuel Hill to his employes. "This company is not going to buy out or be sold out," continued Mr. Mills.

Two hundred and twenty-five employes, some of them accompanied by their wives, were guests of Mr. Hill. In his short address, Mr. Mills told of the beginning of the company, when it took over a property $250,000 in debt, and compared it with the present day solid condition of the institution.

C. S. Jackson, in his address, took up the growth of the organization, describing the process from the primitive conditions that prevailed in the beginning to the present day.

Others at the speaker's table were Dr. K. A. J. MacKenzie, Jay Bowerman, Manager, J. B. Middleton, Senator Fulton, J. C. Lowe, H. E. Hector, T. B. Hayhurst, R. W. Montague, Dr. E. F. Tucker, Eben F. Wells, John B. Coffey, S. R. Mason, and H. J. Roake.

A New Operating Company Publication.

The employes of the Tri-State Telephone & Telegraph Co., of St. Paul, Minn., have issued Vol. 1, No. 1, of Our Emblem, a new publication devoted to the interests of the company and its employes and subscribers.

Our Emblem is, mechanically, one of the handsomest periodicals of this character which has ever come to TELEPHONY'S offices. It is printed in clear type, with attractive heads, on exceptionally good paper. The cover is done in black and red, a big shield decorating the center.

The contents of the first issue are excellent, well written and carefully edited. One department is devoted to the Tri-State Telephone Technical and Social Club. Another feature is a sporting department.

George A. Ingram, of the sales department, is editor. His associates and the departments in the Tri-State system which they represent are as follows: R. A. Dawson, accounting; O. A. Beliveau, plant; Miss Nora Heenan, operating; James Cook, sales; Henry Brock, sales; C. G. Carter, construction; J. A. Beckstrom, switchboard; and L. W. Schottmuller, trouble. Mr. Beckstrom, secretary of the Technical and Social Club, edits the club department in the paper and Mr. Schottmuller is the sporting editor.

Mr. Ingram's opening editorial is a plea for co-operation on the part of every employe and a plea for loyalty. Emphasizing the latter, he quotes, on the back cover, Elbert Hubbard on loyalty: "If you work for a man, in heaven's name, *work* for him! If he pays you wages that supply your bread and butter, work for him—speak well of him—stand by him—stand by the institution he represents. If put to a pinch, an ounce of loyalty is worth a pound of cleverness. If you must villify, condemn and eternally disparage, why not resign your position? And when you are outside, damn to your heart's content; but, as long as you are part of the institution, do not traduce it."

The inside front cover is embellished with "The Origin of Our Emblem," by Manford Savage, president of the National association.

Taken as a whole, the new publication is a distinct credit to those who are responsible for its preparation, as well as a distinct credit to the Tri-State company. TELEPHONY extends its heartiest good wishes for the success of this new monthly periodical, with the aims of which it is in entire accord.

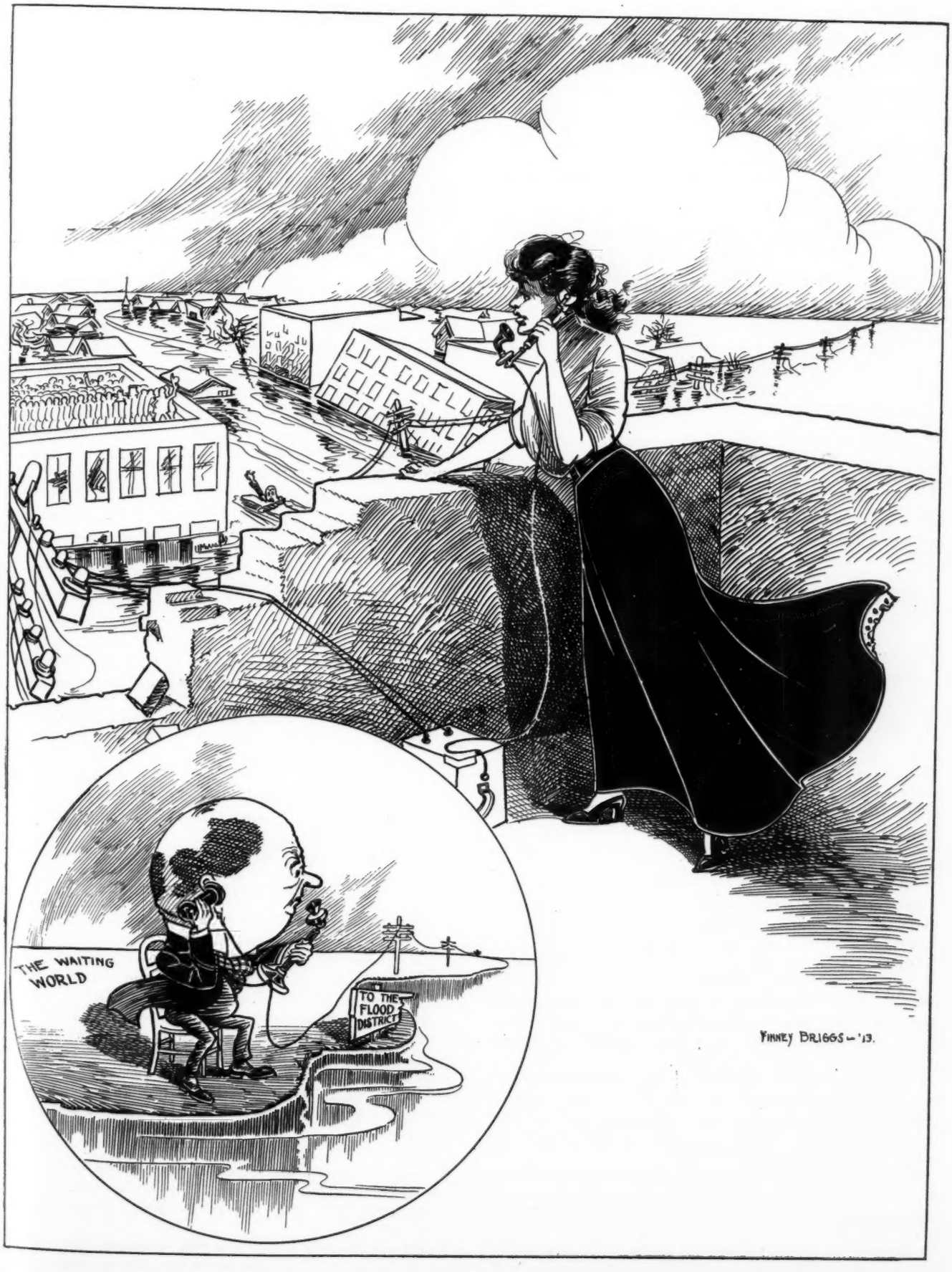
Municipal Ownership Bill for Lincoln.

The Lincoln municipal ownership bill has passed the Nebraska house of representatives, with not a single vote against it.

Under the terms of this measure, the city of Lincoln is empowered to construct, purchase or acquire any and all public utilities, including gas, electric light, power, steam heat, street railway or telephone properties, and to operate them under public ownership. This may be done when the people by majority vote at a regular election or by three-fifths majority at a special election sanction the step.

Whether or not existing properties shall be purchased is to be optional with the city. The old charter limitation of $150,000 on the bonded indebtedness of the city to engage in public ownership projects is removed. In case the city desires to purchase, provision is made for condemning and taking over the plants of private companies, or for buying them at an agreed price.

First Information



The A. T. & T. Company Annual

Figures—Fancies—Facts—Fiction

By J. C. Kelsey

The manager of a small telephone company with 35 subscribers sent out this circular to his patrons:

"You are to be felicitated because we have made a connecting contract which enables your company and its associated companies to reach over seven million subscribers."

Of course, he referred to his contract with the Bell, or so-called universal system, and, true to human nature, he placed the supreme importance on his own property.

The Bell company is much more modest. It places the two and a half million Independent connections on the same plane as its own. This is flattering in some ways, but it has a rude effect upon the Bell defense that compulsory physical connection is impracticable.

I cannot see why voluntary and compulsory connection should have any technical, physical or ethical difference.

The back page of the annual report of the American Telephone & Telegraph Co. should be curtailed in some ways.

In 1896 the company had 300,000 telephones, all of divine origin and sent by express to their destination at the local company's expense. The year 1913 shows a line 7,500,000 telephones high—of different origin and sent any way to get there. It is quite a wonderful contrast.

These conditions are not a result of philanthropy, nor do they represent any weakness of Independent telephony. The only possible weakness of what is known as Independent telephony, applies only to Independent manufacturers.

It is suspected by some that the less informed Independents, with Bell connections, are more likely to be influenced by the Bell factory, but such a case has not yet been proven.

It seems as if we have a bed with strange bed-fellows—5,000,000 Bell and 2,500,000 Independents, and more to come. Not a figure in the 1912 report reveals the real number of Bell or orthodox telephones—you have to figure it out yourself.

The small company with 35 subscribers, connected with 7,499,965 associated telephones.

Likewise, 2,502,627 Independent telephones associate with 4,953,447 Bell telephones, not a hopeless minority either, 33 1/3 per cent.

We must needs realize that a company with 5,000,000 telephones is "some company," as the boys say. And to handle the long distance calls coming from 2,500,000 associated telephones, adds considerably to the operating problem.

I can't get over the mystery of the long distance business. I can't fathom it.

When the Bell company was simon-pure and unsoiled by contact with the telephone proletariat—1895—each telephone earned $11.35 per year in tolls.

In 1912, with that magnificent addition of 2,500,000 telephones as feeders, the average toll earning has dropped to $9.21 per year, the average being based upon 5,000,000 Bell stations alone.

Something is wrong somewhere—if long distance service was so terribly essential, as we are taught to believe it is, the income would not be as low as 25 per cent. of the total.

You will all have to admit that rentals are the bread, butter and meat of the business, while long distance, or interdependence, is but the cake or pie.

The most hopeful occurrence of the year, as far as the Bell company is concerned—as ourselves, too—is the upturn of the average earnings.

For many years nothing has been able to check the downward tendency of gross earnings. They ran as follows:

1895	$81.10
1900	57.28
1905	43.26
1910	40.75
1911	39.83
1912	40.14

While 1912 is but a gain of 31 cents per telephone, it means much more to the Bell company.

If you were an aviator without gasoline, and coming to earth swiftly, you would welcome an atmospheric condition or something akin which would let you rise upward again, if only to check your speed.

The ability to check that downward rush of gross receipts per station is the measure of success or failure for the so-called universal telephone system.

It is hardly possible to reduce the Bell costs as long as they maintain their present methods. Naturally, the only saving possible must be in the gross earnings.

I said in TELEPHONY years ago that, judging from the past history of the Bell, it would be only a question of time until the doom of the Bell universal idea was sounded, because the lowering earnings would cross the line of increasing cost.

As much as you or I may dislike the Bell company, we have no reason to hope for its ultimate failure. As far as I am concerned, I am pleased to see the checking of the down-grade movement. And I know the management of the Bell company must feel pretty good over this apparently insignificant 31 cents. I don't blame them for devoting a whole paragraph to it.

The 1912 performance of each telephone station was:

Gross earnings	$40.14
Total operating cost	30.85
Net earnings	$ 9.29

I feel particularly gratified to read the paragraph on page 12, which tells us that the Bell management has overcome its objections to the telephone station as a unit.

I don't know how else a telephone company could be measured—it could not be measured in watts, pounds or dozens—it must be telephone stations alone.

Last summer, in a hotly fought rate case, the Bell experts strove manfully to upset the station unit, simply because they dreaded any analysis on that basis in that particular case.

The Bell company has expended $131,287,000 for extensions during the last few years. The gross earnings increased $33,560,000. This is a gross earning percentage of 25 per cent.

You know there is a sort of a rule in finance that extensions should earn 25 per cent. or 30 per cent. in gross earn-

ings the very first year. This surely justifies the Bell management in every sense of the word.

I never saw any business which excels the telephone industry on the score of profitable extension.

Before I get away from the station unit idea, I want to remind you of my contention of long standing that $4 per station year is very close to the proper fund for depreciation, to take care of those losses which cannot be met currently.

The 1912 report says: "During the year, $66,705,000 was appled out of revenue to maintenance and reconstruction—of this $15,000,000 was unexpended." In other words, a reserve of $15,000,000 for unseen and unforeseen depreciation was set aside in 1912.

Do you realize that this is but $3.25 per station year? Queer how all these performances and calculations never quite sum up to $4 per year!

When I started out to analyze this depreciation reserve, in all its mysterious angles, I heard on every side remarks that I was a fool, etc.

I could find no property in good, up-to-date commercial condition where, if you divided the total number of telephone years into the total rehabilitation cost, you would find a greater amount than $4.

I know that Bell experts, particularly, hate this $4 idea, but I don't see how they can dispute it.

There are times when all companies feel an exaggerated need of high depreciation rates, but usually not when you are selling bonds and stocks. It is only necessary when you want higher rates.

If you do not believe it, get out your pencil and add up your total rehabilitation costs, not covered by your current obligations, from the day of the company's birth, and divide it by the number of telephone years.

Personally, I think $3.25 is enough, and that no qualified person can adversely criticize Bell depreciation charges for 1912.

And there is another thing. The Bell company pays more taxes than you do. It pays $2 per telephone year. This possibly is due to the great increase in real estate values.

Next to the Catholic Church, the Bell company is the great real estate holder. But it has not been of benefit, because it cannot sell it—it only increases taxes and other expense.

Now follows the point which has ever puzzled me, and I wonder how capitalistic influences can view it with equanimity. The A. T. & T. Co. pays 8 per cent. dividends and earns for surplus, etc., enough to show an earning over 10 per cent.

If you will remember, the total Bell company earns:

Gross	$199,172,154
Cost	142,285,464
Net	$ 56,886,690

On page 8 of the annual report we learn that the physical property has a book value of $736,000,000. This reveals that the company earns 7.7 per cent. upon its property.

We learn that the reproduction value is $797,000,000. On this basis, Bell stewardship returns 7.1 per cent. on its property.

If the reproduction value included intangible assets, 15 per cent. additional, the Bell property amounts to $916,000,000—and the return is 6.4 per cent.

You can see at a glance that there is a grim necessity of gross earning increase.

While there is $916,000,000 worth of property value, the obligations in the hands of the public total $751,200,000. Hence, Bell management returns to holders about 7.5 per cent.

Such a company, scattered so widely, encountering so many various difficulties, and sharing in every disaster, however large or small, can not be said to be robbing the public when it earns but 7.5 per cent.

Don't forget that this company has its troubles. Take it from me, telephone rates are too low in almost every locality.

You know that free service will ruin you, but $1 service lulls you to sleep so you won't see the ruin.

The report of 1912 deserves credit. The 1910 and 1911 reports were full of spread-eagle talk. In one instance, I put to the test a few of the pretty theories advanced. I soon found that the long discussions were only intended for high-browed consumption, and not for low-browed experts to question or discuss.

The Western Electric Co. gets scant notice, except to call attention to the fact, or fancy, that it earns less than other companies of like nature.

That statement is intended to offset the usual accusation that Bell licensee pay exorbitant prices to the Bell factory, thereby gouging the public a little bit more.

I think it is generally realized now that such is not the case—if we can judge by their prices on Independent material.

If anyone wants to look into this, he could get some interesting information if he compared Independent sale prices with the licensee prices.

No one bothers about the Bell factory in the Independent field. It is not a live issue any more. All that Independent companies needed was a chance to satisfy their curiosity about the celebrated Bell instruments. Then they awakened from their troubled dreams about Bell superiority!

The pension and insurance matters deserve great credit. The very nature of a big business works to shift men about, cheating their families out of the advantages of a permanent home, and depriving them of a chance to save and invest money safely. Other institutions will do well to follow the lead of this company.

Of course, it would take lots of space to print the entire Wickersham letter.

The impression will be given to the New England teacher that the attorney general of the United States himself does not believe in "segregated exchanges or limited systems without universality, incomplete and inefficient, neither interdependent nor intercommunicating, except to a limited extent."

Mr. Wickersham did quote some of the beautiful fancies of the 1910 and 1911 reports, but only to show Bell policy.

I don't wonder that Mr. Wickersham passed it up to the Interstate Commerce Commission! It would have been hard for a New York corporation attorney to see any hope in Independent telephony!

I am thankful that we will never again have to wade painfully and laboriously through reports like 1910 and 1911; no longer will they vex and perplex us; time certainly does heal mental conditions as well as physical wounds.

I congratulate the telephone Titanic that its decline in gross earnings has been checked!

MORAL: The lion and the lamb may yet lie down together!

Specifications for Lead Covered Paper Insulated Cable

Continuation of Series of Articles Which Dealt with Specifications and Tests on Telephone and Telegraph Wire Covers Salient Points in Manufacture, Tests and Precautions in Handling and Notes on Electrolysis

By Hugh T. Wreaks, Wire Inspection Bureau

Counting individual wires, by far the greater number of miles of telegraph and telephone work is operated through lead covered paper cables. It is therefore very important to efficient service that such lead covered cable should be so made and installed so as to give long life and good service with high efficiency. From the nature of its construction, it is easily damaged both during manufacture and installation and also as concerns underground cables in service, these latter are liable to damage by electrolytic action of stray currents.

It is therefore very important that this material should be made up under proper specifications and so inspected and tested as to guard against the conditions mentioned. A brief description will therefore be given of the salient points of manufacture; specifications and tests usually called for; tables showing estimated strength of the cables so as to indicate the elastic limit of the combined cable and what handling and straining it will safely stand; and then a few brief notes on electrolysis so as to indicate precautions to take and tests to make after installation and during service on typical sections so as to anticipate latent weaknesses and get the best possible service value out of this material.

Paper insulated cable for telephone and telegraph work is made by winding spirally very thin strips of pure manilla paper, either in single or double layers, around each individual conductor. This paper is first specially treated with preservative and moisture repellent saturating ingredients. Care is taken to see that no alkalies or other chemicals destructive to copper or paper are used and also that the paper is not damaged in the process of wrapping.

After the individual conductors have been wrapped with paper, they are grouped together according to the number of wires there are to be in the made up cable. These grouped conductors are then covered with several layers of similar paper in the form of a belt and, by a special process, every trace of air and moisture is removed. While in this condition, the core is thoroughly saturated and interstices filled with hot insulating compounds. The cable is now ready for the lead sheathing. It is put through the hydraulic lead press and covered with the desired thickness of lead.

The tests on lead covered cables include the usual ones for continuity of conductors, measurements of the lead thickness, size of conductors, thickness of paper insulation, and quality of paper and lead used, also dielectric tests, insulation resistance tests, and tests for electrostatic capacity. The dielectric and insulation resistance tests tell whether the cable has been so made up as not to be damaged in handling, although, with individual conductors grouped together as closely as these are, conditions of dampness at ends of conductors may affect the insulation resistance test by lowering the insulation value unduly.

The tests of most importance to telephone companies are undoubtedly those for electrostatic capacity, as any defects in this direction seriously affects the telephone service. These tests and a description of electrostatic capacity will therefore be given at length.

Electrostatic Capacity.

When wires are grouped together in a cable, their electrostatic capacity is increased. This electrostatic capacity may be referred to as the electrical stretch or spring of the conductor; that is, the electrical field surrounding the conductor apparently stretches or springs and is under tension. The surrounding idle conductors seem to sympathize with the conductor carrying the current, and on account of their presence increase the electrical field. The current held by the field is readily given back to the carrying conductor as the pressure diminishes from a maximum value to zero. This induces a lagging current in the carrying conductor in the same direction as the original current.

The action can be illustrated by considering the difficulties which would be encountered in forcing a stream of water through a hose made of very elastic rubber, especially if the water pressure were reversed in direction or varied in pressure. This action requires that more current be forced into a conductor at the transmitting end in order to obtain a given amount at the receiving end than would be required if the conductor were strung through the air on an open pole lead, under which condition the electrostatic capacity would be small. The extra amount of current which has to be forced into and out of the conductor, is of no value at the far end, being wasted and lost in filling up or stretching the conductor and flowing out again when the pressure is reversed or diminished. It also tends to heat up the conductors and thus causes another loss.

There are two methods for testing for electrostatic capacity: the regular or old standard method of testing to ground with the connections made in the same manner as in a test for insulation resistance, that is, "one wire measured against the remaining wires grounded to the sheath"; and an entirely different test for mutual electrostatic capacity, in which one wire is measured against its mate, the remaining wires being grounded to the sheath. If these two methods of test are applied to the same cable, the average relation between the two methods would be as given in the accompanying table:

Average Regular Capacity		Average Mutual Capacity
.08	equals	.054
.10	equals	.066
.12	equals	.08
.14	equals	.093
.16	equals	.107
.18	equals	.12

This is a feature of telephone specifications which is very important to all buyers and users of telephone cable, especially where long lengths of cable are used, yet its full importance is seldom grasped by the average cable purchaser. For the purpose of obtaining relative efficiency of telephone transmission through the cable of different conductor resistance and electrostatic capacities, Sir William Preece's "KR" Law stands today re-affirmed. This may be expressed as Capacity X Resistance=C.

The law is based upon the fact that as the resistance of a conductor increases, it becomes a poor talking circuit. Likewise, if the electrostatic capacity is increased, the talking circuit is poor and speech transmission is less perfect, and when it decreases, the reverse is true. Since the value of a talking circuit in a cable depends upon both electrostatic capacity and conductor resistance, the relative value of a talking circuit in different cables may be observed by comparing the product of electrostatic capacity and resistance in one cable with the product of electrostatic capacity and resistance of another.

Notwithstanding the fact that for a long time, there has

been one regular standard method of testing for electrostatic capacity, if specifications are not definite, and especially when they do not describe such connections for electrostatic capacity tests as will insure the test being made for regular capacity to ground, that is one conductor measured against all the rest grounded to the sheath, the purchaser who places his order on price only, will very likley find that, instead of obtaining cable with .08 M. F. average electrostatic capacity to ground, he will receive .08 average mutual capacity, that is one conductor measured against its mate and all the other conductors grounded to the sheath. The latter cable costs from 10 to 15 cents less and is an exact equivalent of .12 M. F. average regular capacity to ground. It is therefore 33⅓ per cent. poorer in talking value than the cable paid for. In the writer's opinion, the buyer should ask for both the regular test to ground and for the mutual test, or else only specify the latter. This would have the effect of fixing such a standard for electrostatic capacity tests that any deviation as to the method of testing would require the manufacturer to furnish a more expensive instead of a less expensive cable. Finally the buyer should see that these tests on the cable received conform to the terms of the order.

The reduction of the manufacturing cost, which results from an increase in capacity, is brought about because the manufacturer is usually able to meet the new specification with a cable of smaller diameter and, consequently, a reduced weight of lead. Some purchasers assume that if they require the manufacturers to figure on cable of the same diameter, they will obtain cable of equal merit and of equally low electrostatic capacity. This, however, is not the case, since the electrostatic capacity is affected both by the material used and the method of manufacture.

A combination of insulating papers made of inferior material or improperly treated, or unskilled application when made up into a cable form, results in a higher average capacity as well as uniformity in the capacity of the wires in the different parts of the cable. An insufficient drying of the core will also leave the conductors with excessively high capacity. The only way for the buyer to safeguard his interests in this matter and which would be fair to the purchaser and manufacturer, is to omit any reference to outside diameter. Then make the specifications clear and definite as to the size of the conductor insulation on each conductor, insulation over the core, thickness and composition of the sheath, average microfarads per mile and the method of testing. Care should be taken to see that the requirements are actually met.

It is possible to obtain cable with a capacity too low, but the writer believes that an average regular electrostatic capacity of not more than .078 M. F. and an average mutual electrostatic capacity of .052 M. F. could be specified to advantage on long wires. The A. T. & T. Co. specifications give average mutual electrostatic capacity of .070 M. F. on No. 22 B & S wire cable and .074 M. F. on No. 19 B & S wire cable.

(To be Continued.)

Advantages of Control of Telephones by Commissions

Plan, Which Is of Comparatively Recent Development, Growing Rapidly, Meeting with Public Favor and Certain to Become Practically Universal—How Telephone Companies Should Meet It—An Address Prepared for Delivery at National Convention

By C. E. Tarte

Public utility commissions have been in existence in some states for a good many years. It is only within the past few years that telephone men have become interested in commissions of this kind. Until recently telephone companies were governed by general laws, admitting usually of a great deal of latitude in their interpretation, and making it hard sometimes to decide, without the assistance of the courts, just what the laws meant.

At each session of the legislatures of the different states bills of all kinds affecting the control of telephone companies, their service, their dealings with the public, methods of operation and their rates, have been presented, and occasionally some of them passed.

It was impossible for the legislators to arrive at an intelligent understanding of the problems presented in the little time that they had to study them, and the results were usually weird and absurd.

For several years there has been a growing demand for laws compelling physical connection between the lines and exchanges of competing companies, and the discussions caused by attempts to pass these bills have done more than any other one thing, to show legislators the necessity of having permanent commissions in charge of telephone companies. Having accomplished this alone, the discussions have been well worth while.

Commission Control Desirable.

State commission control seems to be desirable from whatever point of view it is looked at. There is danger, of course, that politics, "playing the grandstand," or corruption, may prevent, in some cases the public and in others the companies, from getting a "square deal," but the chances are remote and reduced to a minimum. State commissions are generally non-partisan bodies, appointed for a long term of years; their members become experts from long experience; they are not interested locally in the issues before them, and are not subject to the influence of local clamor and agitation.

Municipal bodies or local "business men's committees" are not able to arrive at wise and equitable conclusions in a discussion of rates because of the influence of local interest and local politics. An organization of this kind cannot possibly have the expert technical knowledge necessary for a proper consideration of the subject and cannot give it the thorough and extensive consideration it should have.

The public has a right to reasonable rates and adequate service; the companies are entitled to rates that will properly take care of expense and depreciation and leave a reasonable profit for the investors. It seems impossible to consider all of the phases of the problem without the aid of an impartial, uninterested commission, clothed with the necessary authority and dignity of appointment under state laws.

The problems are many. Valuation of properties must be taken, and experienced intelligence used in the application of construction costs, expense of securing business, interest during the construction period, intangible cost of organization, engineering and supervision, and the proper rate of depreciation. Books must be audited, discriminations eliminated, and the unfair competition of service below cost done away with.

Undoubtedly we are not agreed as to the necessity or desirability of the so-called certificate of "public conveni-

ence and necessity" that is part of some of the commission laws, but it seems to be a necessary adjunct of the authority to regulate rates. It seems unfair and unreasonable that a commission should decide on a 7 per cent. or 8 per cent. profit for a term of years without giving it the authority to protect the companies thus regulated from competition that may be ruinous to them as well as to the new investors.

Possibly some of the things that have been accomplished by commission control may be of interest and assistance to those who have had no experience along these lines. It is sure to come and it seems to be a question of only a short time when practically all of the states will provide for such commissions.

Many telephone companies are operating under local franchises obtained a good many years ago, in which the rates fixed are too low to enable them to earn a reasonable return on their investment. Under commission control and the right to regulate rates these companies will undoubtedly be released from franchise obligations of this kind.

The commission law in Michigan provides for the merger of competing properties subject to the approval of the Railroad Commission. There is considerable difference of opinion as to whether or not that provision should be in the law. It was placed there by interested parties.

There is this much to be said about it, however. Many Independent companies in Michigan have been purchased by the Bell company in the past, and immediately after the purchase they have been disconnected from the other Independent companies, and the territory served by them has been entirely lost. Using the merger provision of the Michigan laws as a means of protection in mergers that have been made recently, the Independent companies prevailed upon the Railroad Commission to embody in its permit all of the safeguards that could possibly be thought of for the continuation of service with the territory merged.

If the properties are operated separately we get connections with both systems; if combined, with the combined properties. Disputes regarding service division of tolls, proper junction points, and practically all of the matters that would ordinarily enter into contract between affiliated companies, have been taken care of by the merger permit, and if any disputes arise in regard to their interpretation, the Railroad Commission has the authority to settle the disputes.

Defect in Michigan Law.

There is one serious objection to the Michigan law regarding the regulation of rates. The law reads:

"The charges made for all service rendered, furnished or performed . . . shall be reasonable and just. And the commission shall have power to make, alter, amend or abolish any rate," etc.

There is no provision in the law in regard to the proper methods to be used by telephone companies in their attempts to raise rates, and no provision whereby the Railroad Commission can take any action in regard to a raise in rates until complaint has been made to it. The result is that the telephone companies have to notify their subscribers that their rates will be raised, and generally have to go through the experience of mass meetings, criticisms in the newspapers, threats to take out telephones, etc., before the matter is finally brought in a formal way to the attention of the commission.

Then, after that, the company either has to return to the old rates until the commission investigates, hears evidence and comes to its final conclusion, which may not be for several months, or else can "stand pat" on its first proposition, charge the new rates, lose the subscribers that it necessarily will lose, and then, perhaps, when a decision is handed in, be compelled to go back to the rates in existence before the raise was made. The whole thing is handled wrongly.

The law should be that telephone companies desiring to raise rates make application to the Railroad Commission, and the whole matter be thoroughly investigated and inventories taken, income estimated, expense items carefully looked over, and then the public in the community to be affected by the raise, notified that a public hearing will be had on a given date.

In this way there would be no hard feeling aroused between the company and its subscribers, and the decision of the commission, after a public hearing and a chance for the subscribers, as well as the company, to present their side of the case, would undoubtedly produce results satisfactory to all concerned.

I am satisfied that commission control is good. Many mistakes will be made in the drafting of commission laws, as well as by the commissions themselves, but the final results will be a safeguarded investment and a satisfied patronage.

Extensions Planned for Alberta.

Estimates for 1913, prepared by W. J. Harmer, deputy minister of telephones of Alberta, Canada, show plans for the expenditure of $900,000 on rural lines, an increase of $250,000 over last year; $700,000 for exchanges, or $250,000 more than in 1912, and $400,000 for long distance lines. The latter item is not so large as in 1912, for the reason that the work completed last year will meet the requirements of the province for some time. However, it is given out that preparations will be made to keep this branch of the service fully up to date.

Mr. Harmer's report shows there were in operation in the province at the close of the year 6,689 miles of toll lines, and 9,671 miles of rural lines, connecting 7,120 rural subscribers and giving service to 14,692 exchange subscribers. Toll lines have been increased in four years, since the province took over the Bell system, which had been operating there for 15 years, from 1,859 wire miles, connecting 70 offices, to 6,698 miles, connecting 234 offices, there having been as many miles constructed during each subsequent year as during all years previous to December 31, 1908.

There were 2,494 wire miles of long distance lines constructed during 1912, the banner construction year in the history of the province. This represents an increase of 59 per cent. on previous total miles in operation. On rural lines the amount of wire miles was almost doubled, there being 4,746 miles constructed, as against 4,925 in operation at the beginning of the year, an increase of 96 per cent. In all 3,336 new subscribers were added to the 3,784 rural subscribers at the beginning of 1912, and 3,840 new exchange subscribers were added to the 10,852 exchange subscribers. The increase in the number of rural subscribers was 88 per cent., and in exchange subscribers 35 per cent. At the end of the year the totals stood as follows:

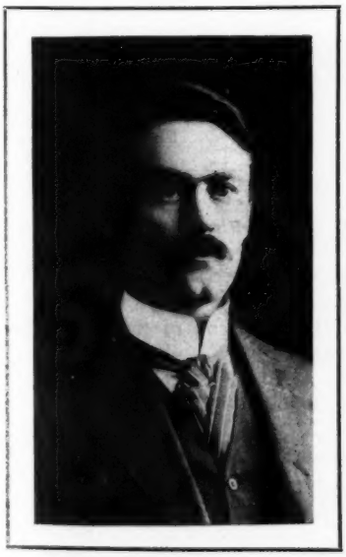
Long distance lines in wire miles, 6,698; rural lines in wire miles, 9,671; subscribers at rural stations, 7,120; subscribers at exchange stations, 14,692.

Thirteen town exchanges were constructed during 1912. New central office equipment was installed in 26 others, and extensions were made to all existing exchanges, 17 of which were either rebuilt or considerably enlarged. The greatest growth was naturally in the large centers, Calgary, Lethbridge, Medicine Hat and Macleod. The Edmonton exchange is the property of the municipality, which also owns and operates all the public utilities in the city.

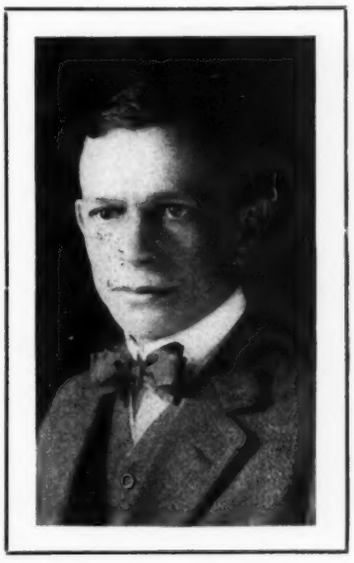
A Quartet of Men Prominent in the Telephone Field

CHARLES R. BLEAKNEY, manager of the Sidney Telephone Co., Sidney, Ohio, has worked his way up from the bottom in the telephone field. His first employment in it was with the Zanesville (Ohio) Telephone & Telegraph Co., in 1900. In the same year he went with the Central Union Telephone Co., with which company he remained until September 25, 1905, as installer, troubleman, wire chief and manager, successively. He left the Central Union to accept the position of manager for the Sidney Telephone Co., which he still holds. He was secretary of the Sixth District of the Ohio Independent Telephone Association in 1908 and 1909. With L. L. Layton, of Sidney, he invented the Hy-Po-Stat cable terminal. Before entering the telephone business Mr. Bleakney was in the grocery business for several years. He was born in Zanesville, Ohio, June 26, 1878, and educated in the public schools of that city. He is a Mason—a Knight Templar. When he assumed the management of the Sidney company there were 787 subscribers. Today there are 1,602. He has also succeeded in increasing and holding up the company's rates.

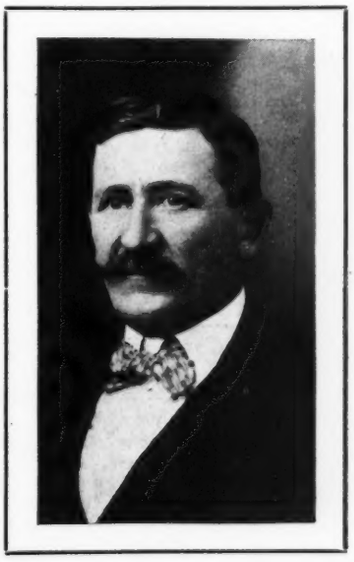
FRANK A. BOWDLE, secretary and general manager of the Cerro Gordo (Ill.) Telephone Co. and director of the Union Telephone Co., Chatham, Ill., was born on a farm in Piatt county, Ill., May 31, 1873. His education was obtained in the Bement High School, Browns Business College and the Armour Institute, in Chicago. In 1900 he became general manager of the Union Telephone Co., at Chatham, increasing the number of subscribers many times during his incumbency. He was made secretary and general manager of the Cerro Gordo company in 1910. He successfully carried through a general increase in rates for this company, rebuilt the plant and now claims one of the most modern underground systems for a town of the size of Cerro Gordo in the state. He was primarily responsible for the organization of the Central Illinois Telephone Association, and is a regular attendant at all district and state meetings of Independent associations. He is a property owner and in the drug business in Cerro Gordo. He is a Royal Arch Mason, a member of the Knights of Pythias, of the Woodmen and of the Sons of Veterans.



FRANK E. BOHN, assistant general manager of the Home Telephone & Telegraph Co., of Fort Wayne, Ind., is a graduate of Williams College, Williamstown, Mass., and of Purdue University Lafayette, Ind. After leaving college he entered the employ of the Perfection Biscuit Co., at Fort Wayne, Ind. In 1907, when he resigned to engage in the telephone business, he was sales and office manager for the company. Mr. Bohn associated himself with the Home Telephone & Telegraph Co., at Fort Wayne, and, in January, 1910, three years later, he was promoted to the position which he now holds—assistant general manager. He is a member of the executive committee of the Indiana Independent Telephone Association, having served as such in 1911 and 1912 as well. He has always taken an active part in the operations of the state association, as also in those of the National Independent Telephone Association. Mr. Bohn was born in Fort Wayne, Ind., November 24, 1883. He is a member of the Beta Theta Pi fraternity, the Commercial Club, of Fort Wayne, and the Purdue Alumni Association, of Fort Wayne.



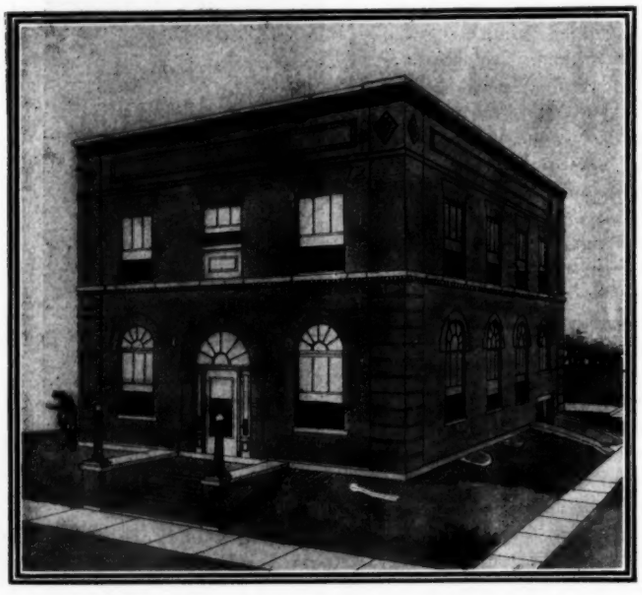
GEORGE W. FAIR, president of the Wabash Valley Telephone Co., operating at Paris, Marshall and Chrisman, Ill., was born at Steam Point, near Paris, February 25, 1853, and received his education in the schools of Edgar county. He began his business career in the general merchandise line, which he followed for four years. In 1878 he married and moved to the farm, continuing in that occupation until the telephone attracted him, in May, 1895. At that time he, with two others, began operating a few party lines, without any exchange. In June, 1895, they installed the first switchboard in Edgar county, at Chrisman. In September they incorporated as the Schance & Fair Electric Co., which later became the Wabash Valley company. Mr. Fair has attended practically all the national conventions and taken part in the solution of the various problems arising. He was a member of the committee which selected the Independent emblem. Since entering the telephone field he has given his entire attention to operation. He is a member of Bloomfield Lodge A. F. & A. M. No. 148 and I. O. O. F. No. 541.



United, of Monroe, Wisconsin, Builds New Exchange

Plans and Elevations of Exchange and General Office Building Here Shown, with Description of Materials Entering Into Construction, Offer Suggestions to Other Companies Contemplating Building —the Company's Financial Situation

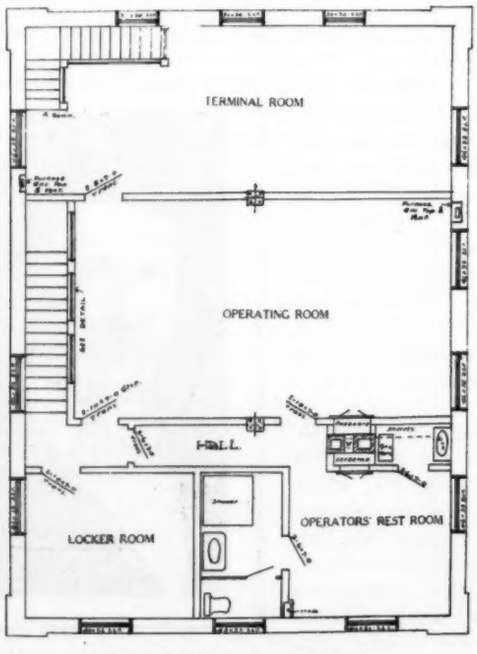
The United Telephone Co., of Monroe, Wis., is just completing a new two story and basement telephone exchange, which will house its operating equipment, as well as the company's general offices. It is one of the handsomest buildings of its kind in the state and the accompanying reproduction of the



Front Elevation of New Exchange at Monroe, Wis.

architect's wash drawing of the front elevation comes far from showing its real attractiveness.

The walls are of a dark paving brick laid in dark mortar,

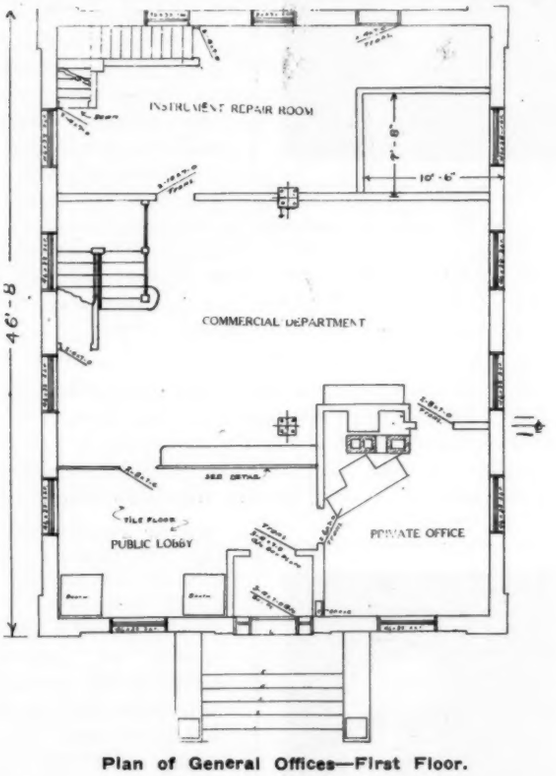


Second Floor Arrangement.

the pattern being a form of Flemish bond. The outside walls are lined with hollow brick, to promote warmth and dryness, the partitions being of hollow tile. The floors, girders and beams are all of reinforced concrete, thus making it as near absolutely fireproof as modern building methods permit.

The first floor is to be given over to the offices of the United Telephone Co.; the second will contain the apparatus. The construction was accomplished by day labor and under the immediate supervision of the officers of the company. The accompanying etchings show the arrangement of the basement and the two upper floors of the new exchange, from which it will be observed that every convenience in arrangement has been carefully conserved and every provision made for the comfort of the operating force.

The United Telephone Co. has been in existence 12 years. Last fall, shortly after the close of its fiscal year, it paid its twentieth semi-annual dividend. The annual rate is 6½ per cent. The condensed income statement made public at that time showed gross revenue of $28,789, with operating expenses,



Plan of General Offices—First Floor.

not including $5,523 set aside for depreciation, of $14,895, or slightly over 50 per cent. of gross.

The income statement in full, at the end of the fiscal year, June 30, 1912, was as given below:

REVENUE ACCOUNT.
Year Ended June 30, 1912.

Total operating revenues	$27,505.92
Total net non-operating revenues	593.48
Interest earned during year	689.70
Total revenue	$28,789.10
Total operating expenses*	20,418.61
Net income	$ 8,370.49

*This includes $5,523.06 set aside for depreciation for the year and $327.24 of taxes.

The balance sheet as of June 30, 1912, was as follows:

BALANCE SHEET.
As of June 30, 1912.
ASSETS.

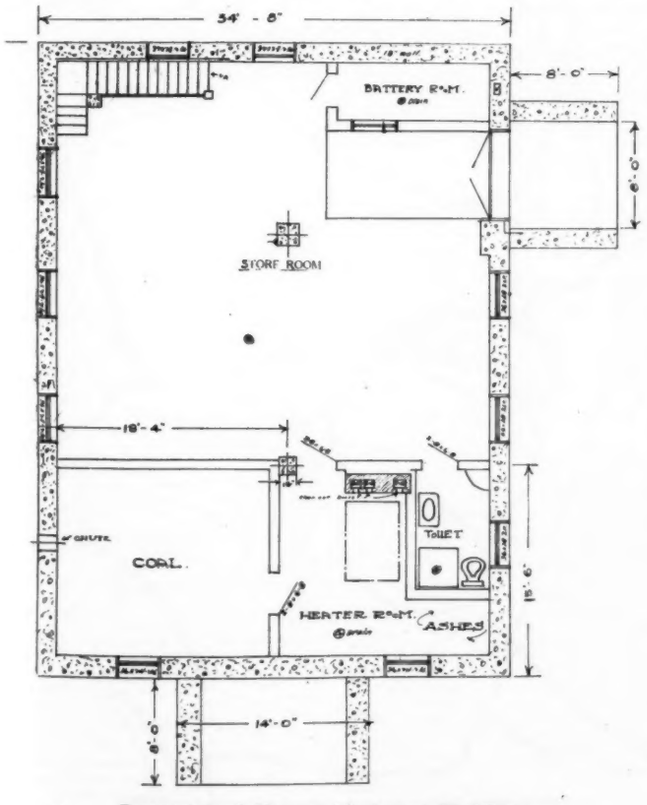
Plant	$80,911.64
Real estate	2,300.00
Bills receivable	13,356.00
Accrued interest	142.73
Cash	46.05
Accounts Receivable	1,470.71
Miscellaneous assets	164.80
	$98,391.93

LIABILITIES.

Capital paid in	$66,268.82
Script	189.53
Undivided profits	9,097.65
Dividend No. 20	2,145.35
Depreciation fund	20,363.38
Reserved for taxes	327.20
	$98,391.93

The total number of telephones owned by the United company at the time its last statement was made, was 1,187. It was also operating 647 telephones for other companies. These figures have, of course, been considerably increased in the intervening seven months. Exchanges are owned and operated at Monroe, Albany, Monticello and Blanchardville, from all of which rural lines radiate into the surrounding country. The company also owns many miles of toll lines.

The officers are as follows: President, C. W. Twining; vice-president, W. B. Monroe; secretary, F. A. Shriner; treasurer,



Basement of Monroe Exchange Building.

J. Carl Penn; general manager, P. J. Weirich. E. M. Knapp completes the directorate.

Mr. Weirich, to whose efforts must be ascribed a large part of the success which has attended the operations of the United company, is thoroughly experienced in all branches of the business. He was for some time associated with Jones & Winter, the well known telephone engineers; later he was connected with the Wisconsin Telephone Co., at Milwaukee and Racine, Wis. He came to Monroe in 1902, affiliating himself with the United and the Monroe companies. He has been secretary of the Wisconsin State Telephone Association since its organization, and active in its work.

Brazos Valley Company Expands Holdings.

By arrangements which were completed last month, the Houston Home Telephone Co., of Houston, Texas, and the United Telephone Co., which has headquarters in Austin, became closely affiliated with the Brazos Valley Telephone & Telegraph Co., with headquarters in Waco. The acquisition of the Houston plant was briefly announced in these pages last week.

The United Telephone Co. operates exchanges in Austin, Temple, Taylor and Belton with a total of about 2,500 subscribers. This company connects with the toll lines of the South Texas Telephone Co. at the above named exchanges. The company has been under the management of E. A. Glass for some time past.

The Houston Home Telephone Co. operates in Houston alone. This is one of the recently installed modern automatic plants of the state, with, now, about 3,500 subscribers. The exchange is located in the company's own building, which is high class in every particular, and one of the finest Independent telephone buildings in the state. The plant is in good shape, and when some needed extensions have been made it will be possible to accommodate a large number of new subscribers.

F. E. Ebersole, who built the Houston plant, and who has been in charge of the business since it began operation, has resigned to give attention to his other interests. L. P. Wells, formerly with the company as contract agent, has been made manager, and Mr. Engh has been appointed plant chief.

The new officers elected for both companies were: J. B. Earle, president; Ben C. Hyde, vice-president; and E. C. Blomeyer, secretary and treasurer.

The San Antonio Telephone Co. also recently became one of the associated companies of the Brazos Valley system. This company, which operates in San Antonio alone, has about 4,000 telephones, employs some 65 people, and has connection with the toll lines of the South Texas Telephone Co., besides several smaller local toll line companies.

The company operates ten large private branch exchanges in San Antonio, including the Travis Club, Joske Bros. Department Store, and the new St. Anthony Hotel, which alone has almost 500 telephones.

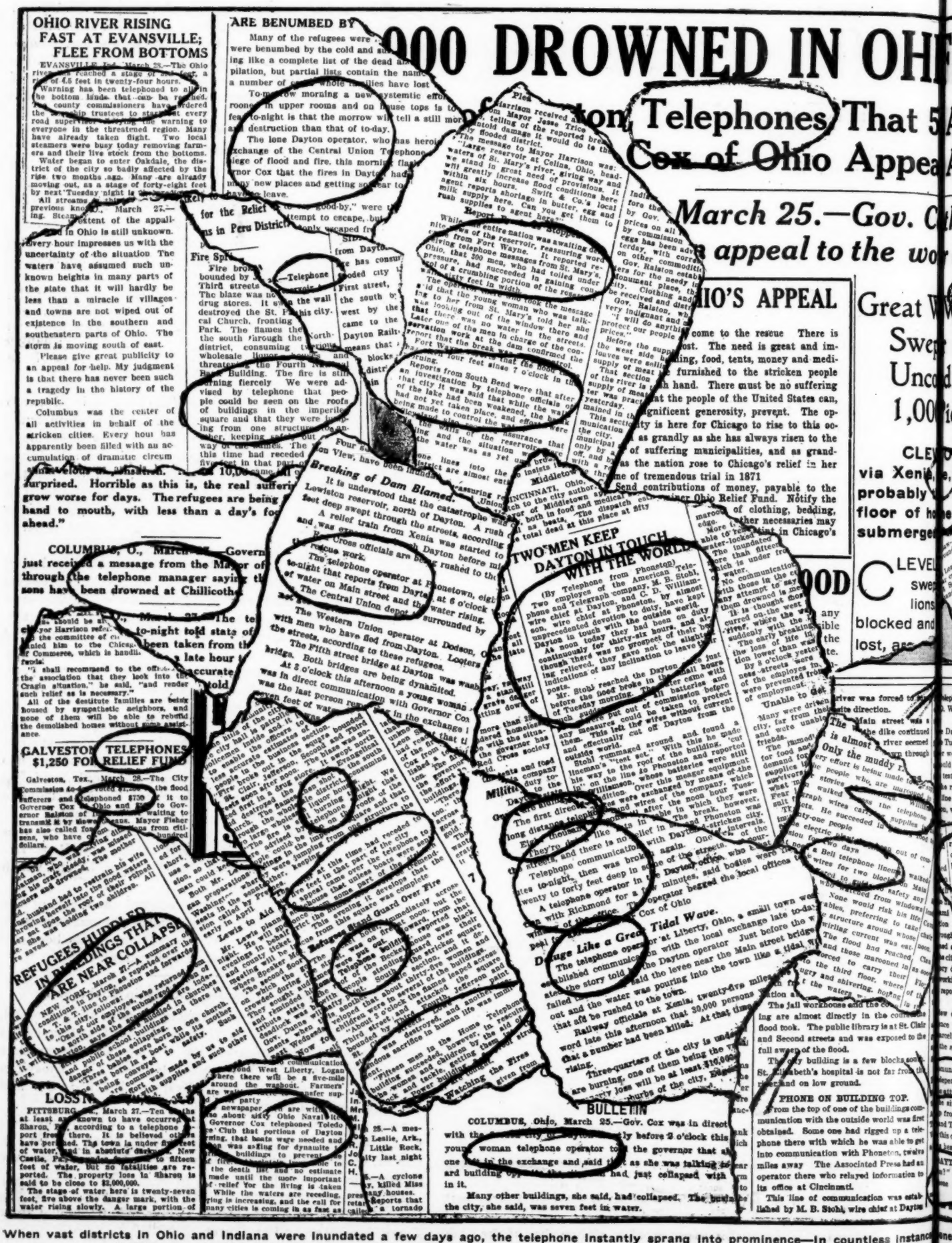
Buford Adams, who has been general manager of the Brazos Valley system since the change in management, May 1, 1912, has resigned. P. Kerr Higgins has been appointed general superintendent of the system.

Bell Employes Organize Society in Richmond.

The first meeting of the Telephone Society of Richmond, Va., was held recently, in that city, about 150 members being present. This organization is made up of employes of the Chesapeake & Potomac Telephone Co., American Telephone & Telegraph Co., Western Electric Co. and Western Union Telegraph Co.

Speeches were made by J. W. Crews, division manager; R. L. Wright, division superintendent of plant, and W. A. Condit, division superintendent of traffic, of the Chesapeake & Potomac Telephone Co.

The officers of the club for the first year are: G. A. Edwards, president; J. P. Orth, vice-president; and Lamar Tyree, secretary and treasurer.



900 DROWNED IN OHI

...ton, Telephones That 5...
Cox of Ohio Appea...

March 25.—Gov. C...
...appeal to the wo...

OHIO RIVER RISING FAST AT EVANSVILLE; FLEE FROM BOTTOMS

EVANSVILLE, Ind., March 28.—The Ohio river has reached a stage of [illegible] feet, a rise of 4.5 feet in twenty-four hours.

Warning has been telephoned to all in the bottom lands that can be reached. The county commissioners have ordered the township trustees to stand at every road supervisor's house, giving the warning to everyone in the threatened region. Many have already taken flight. Two local steamers were busy today removing farmers and their live stock from the bottoms.

Water began to enter Oakdale, the district of the city so badly affected by the rise two months ago. Many are already moving out, as a stage of forty-eight feet by next Tuesday night is [illegible]

All streams [illegible] previous known [illegible], March 27.—ing. Steadily [illegible] extent of the appall- [illegible] in Ohio is still unknown. Every hour impresses us with the uncertainty of the situation. The waters have assumed such unknown heights in many parts of the state that it will hardly be less than a miracle if villages and towns are not wiped out of existence in the southern and southeastern parts of Ohio. The storm is moving south of east.

Please give great publicity to an appeal for help. My judgment is that there have never been such a tragedy in the history of the republic.

Columbus was the center of all activities in behalf of the stricken cities. Every hour has apparently been filled with an accumulation of dramatic circum[illegible] surprised. Horrible as this is, the real sufferi[illegible] grow worse for days. The refugees are being [illegible] hand to mouth, with less than a day's fo[illegible] ahead."

ARE BENUMBED BY

Many of the refugees were [illegible] were benumbed by the cold and [illegible] ling like a complete list of the dead a[illegible] pilation, but partial lists contain the name[illegible] a number of [illegible] whole families have lost

To-morrow morning a new [illegible] systemtic effo[illegible] rooms in upper rooms and on house tops is t[illegible] fear to-night is that the morrow will tell a still mor[illegible] and destruction than that of to-day.

The lone Dayton operator, who has heroi[illegible] exchange of the Central Union Telephone [illegible] lege of flood and fire, this morning flas[illegible] rnor Cox that the fires in Dayton had [illegible] many new places and getting so near to [illegible] Dayton to leave.

for the Relief [illegible] Good-by," were t[illegible] attempt to escape, but [illegible] ns in Peru District** [illegible] only escaped fr[illegible]

Fire Sp[illegible]

Fire broke [illegible] bounded by [illegible] Third streets [illegible] The blaze was n[illegible] drug stores. It swept the wall [illegible] destroyed the St. Pa[illegible] his city. [illegible] cal Church, fronting [illegible] Park. The flames the[illegible] the south through the [illegible] district, consuming [illegible] wholesale liquor [illegible] and [illegible] threatening the Fourth N[illegible] Bank Building. The fire is sti[illegible] burning fiercely We were ad[illegible] vised by telephone that peo[illegible] ple could be seen on the roofs of buildings in the imperile[illegible] square and that they were [illegible] ling from one structure to an[illegible] other, keeping [illegible] out [illegible] way of the flames. The [illegible] this time had receded [illegible] five feet in that part of [illegible]

Breaking of Dam Blamed.

It is understood that the catastrophe [illegible] Lewiston reservoir, north of Dayton. A rush [illegible] feet deep swept through the streets, according [illegible] and was [illegible]

A relief train from Xenia was started to [illegible] Cross officials are [illegible] rescue work.

The telephone operator at Phonetown, eigi[illegible] to-night that reports from Dayto[illegible] of water on Main street and th[illegible] The Central Union depot [illegible] surrounded by [illegible]

The Western Union operator at Dodson, O[illegible] with men who have fled from Dayton. Loopers [illegible] the streets, according to these refugees.

The Fifth street bridge at Dayton was washe[illegible] bridges. Both bridges are being dynamited.

At 3 o'clock this afternoon a young woman was in direct communication with Governor Cox [illegible] was the last person reg[illegible] in the exchange t[illegible] seven feet of wat[illegible] had reported that t[illegible] of the fir[illegible] lished [illegible] Cox from [illegible] the governor [illegible] the effort [illegible] buildings. [illegible] across [illegible] fold [illegible]

TWO MEN KEEP DAYTON IN TOUCH WITH THE WORLD

(By Telephone from Phonetop)

Two employes of the American Telephone and Telegraph company, M. B. Stohl, wire chief at Dayton, by almost unprecedented devotion to duty, have kept Dayton in touch today with the outside world.

As noon today for thirty-six hours on duty continuously without sleep, and though there was no prospect of their being relieved, they gave not the slightest indications of any inclination to leave their posts.

Mr. Stohl reached the Dayton office just before the flood broke in the early morning. He at once put out of commission before any measures could be taken to protect them effectually cut off Dayton from the outside world.

Stohl rummaged around and found a lineman's "test set." With this he "cut in" on the line to Phonoton and reported his way to the roof of the building. Williamson, whose batteries were still on the line to Phonoton and reported his fires were exchanged by means of the and after of the company, which [illegible] able in which hour Tues- [illegible] break, however, [illegible] Phoneton was [illegible] with Dayton stricken city. [illegible] intervals. [illegible] of the [illegible] Cox of Ohio

Deluge Like a Great *Tidal Wave*.

The telephone operator at Liberty, Ohio, a small town we established communication with the local exchange late to-da[illegible] the story told by the Dayton operator Just before the w[illegible] said the levee near the Main street bridge [illegible] failed and the water was pouring into the town like a tidal w[illegible] out and rushed to the town.

Railway officials at Xenia, twenty-five miles [illegible] that aft be rushed to the town.

word late this afternoon that 30,000 persons [illegible] that a number had been killed. At that time [illegible] rising.

Three-quarters of the city is under [illegible] are burning, one of them being the [illegible] property loss will be at least $10,000,000. [illegible] suburbs of the city, [illegible]

BULLETIN

COLUMBUS, Ohio, March 25.—Gov. Cox was in direct [illegible] with the [illegible] city [illegible] early before 2 o'clock this [illegible] young woman telephone operator to [illegible] the governor that a[illegible] one [illegible] in the exchange and said that as she was talking to [illegible] ard building [illegible] had just collapsed with [illegible] in it.

Many other buildings, she said, had collapsed. The business the city, she said, was seven feet in water.

HIO'S APPEAL

[illegible] come to the rescue There is [illegible] ost. The need is great and im- [illegible] ning, food, tents, money and medi- [illegible] furnished to the stricken people [illegible] hand. There must be no suffering [illegible] that the people of the United States can, [illegible] gnificent generosity, prevent. The op- [illegible] ity is here for Chicago to rise to this oc- [illegible] as grandly as she has always risen to the [illegible] of suffering municipalities, and as grand- [illegible] as the nation rose to Chicago's relief in her [illegible] of tremendous trial in 1871

Send contributions of money, payable to the [illegible] Ohio Relief Fund. Notify the [illegible] of clothing, bedding, [illegible] other necessaries may [illegible] in Chicago's

Great W... Swe... Uncol... 1,00...

CLEV... via Xeni..., e... probably ... floor of ho... submerge...

C LEVEL... swe... lions... blocked and... lost, ar...

...OD

GALVESTON TELEPHONES $1,250 FOR RELIEF FUND

Galveston, Tex., March 28.—The City Commission to-[illegible] voted $1,[illegible] the flood sufferers and [illegible] telephoned $730 [illegible] it to Governor Cox Ohio and [illegible] to Governor Ralston of [illegible] waiting to transmit it by [illegible] wires. Mayor Fisher has also called for [illegible] tions from citizens, who have [illegible] hundred dollars.

REFUGEES HUDDLED IN BUILDINGS THAT ARE NEAR COLLAPSE

NEW YORK, March 27.—A summary of the conditions in Dayton, as reported over the A. T. & T. line, to Phonoton and forwarde[illegible]

"One of our employes, who returned to this city, follows:

"The north side of the [illegible] huddled into churches and public school buildings and there is danger of these tables were born in one church, "Three babies were born in one church, being conveyed to safety. Such [illegible] were [illegible] made by us to aid [illegible] with supplies and such other [illegible]

LOSS [illegible]

PITTSBURG, [illegible], March 27.—Ten [illegible] ths at least are known to have occurred at Sharon, Pa., according to a telephone [illegible] port from there. It is believed other [illegible] have perished. The town is under five feet of water, and in absolute darkness. New Castle, Pa., [illegible] to fifteen feet of water, but no fatalities are reported. The property loss in Sharon is said to be close to $2,000,000.

The stage of water here is twenty-seven feet, five above the danger mark, with the water rising slowly. A large portion of [illegible]

PHONE ON BUILDING TOP.

From the top of one of the buildings communication with the outside world was first obtained. Some one had rigged up a telephone there with which he was able to get into communication with Phoneton, twelve miles away The Associated Press had an operator there who relayed information to its office at Cincinnati.

This line of communication was established by M. B. Stohl, wire chief at Dayton

When vast districts in Ohio and Indiana were inundated a few days ago, the telephone instantly sprang into prominence—in countless instance[illegible] disaster—scores of heroic deeds were performed by employes of telephone companies, either in the transmission of intelli[illegible] they serve to show what actually occurred and to emphasize [illegible]

FLOODS, IS REPO

Are Dead i

All the W

places of safety.

The water crept higher and higher and finally it was

Station. Some parts of the city were under thirty feet of

It was at first reported that

received from

bodies floating

At 9 o'clock the Mayor

a message declaring

30,000 were homel

At 10 o'clock

swept down

were dro

Hundreds were

swift current.

drowned in

BODIES OF
AT DAYTON;
RELIEF ON WAY

Blizzard Adds Agony

600 ZANESVILLE
HOMES SWEPT AWA
FOOD IS BIG NEE

ZANESVILLE, Ohio, March 28.—The Mus-

Relief party telephones to

bodies have been reco

Less than one

Water from ten to twen-

under water.

five feet deep is running through city

of twenty miles an hour. Relief

hurried there from many near-

People cling to roofs all night.

FAMINE AND COLD
FOLLOW AS FLOOD
FALLS AT ZANESVILLE

ZANESVILLE, Ohio, March 28 (by long-

distance telephone to Pittsburg).—With th

inhabitants, 10,000 of whom are homeless,

by the first gleam of hope since the flood

the Muskingum river swept through the

three days ago.

river had commenced to recede, re-

ports of the national guard on

the streets were entering the sub-

and provisions had arrived to a point

ter, the danger from the city. The sun

and there were in-

old of the last

cutive officer of the state has been

from daylight to long past midnight to

His hand has guided everything done in

with the knowledge that this task was for the

attention to pay problems of prevent-

ing life and property and relieving the

ing flood victims and the care of the dead.

The hero of the Dayton disaster, John A. Bell, the telephone official, who

marooned in a business block, has been keeping Governor Cox informed

every half hour of conditions in the stricken city and delivering orders

through boatmen who rowed to his window, called the state house at day

break to-day and greeted the executive with a cheer

nor; the sun is shining in Dayton."

But sunshine gave

to a driving snowstorm later in the day and

the reports coming from Bell were less cheering as the day advanced, until

the ominous word from Adjutant General Wood was received that what

Estimates Are P

the Town of M

4,000 Inhabi

ported in

ALL CHAOS, DAYTON PHONES

aken City Talks to 'Tribune'
er Long Distance Wire.

STREET IS A TORRENT

32

ally Every Building in the
Place Is Flooded.

GIRL OPERATORS FLASH NEWS.

Cincinnati, O., March 28.—It

two girls to

first

of the flood. Both are operators

in different lines. One, a telephone oper-

ator in the main exchange of Dayton, flash

the last tidings that came out of the stricken

by telephone early today, and also

to Gov. Cox which enabled the execu-

to grasp the situation and start the

work.

The other

telegraph operator at

Phoneton, eight miles north of Dayton, who

served as a relay operator for the girl in

Dayton. Both stood to their posts as long

as the wires held.

The young woman at Phoneton, Mrs Rena

White Eaken, worked all during the day and

night.

Katherine Gilbreth, 'Hello Girl'
Who Told Flood Story.

forty-eight hours Miss Katherine Gilbreth

operator in the telephone exchange in

remained at her post, marooned by

to eight feet of water. She and her

crackers and a can of ice cream out

and subsisted on the meager rations

With no knowledge of the fate of

sister Miss Gilbreth used all her

Food

means of a spare lineman's test

nation from Peru and the out-

wherever part of a telephone line

who

ly so that when she finally

would have information for

prisoners

reached her exchange over

caused

bridges a short time before

to allow her to leave.

"The

When The Record Herald

that food

wire, the first com-

away by

part of the city. Miss

and flo

of the existing flood

Caption: One line afforded the only means of communication between the flooded districts and the outside, where thousands waited for news of the first tremendous odds, or in the direct saving of life—the clippings above reproduced mirror only a few of these cases, but the incalculable value of the telephone to the modern world.

The Telephone Inspector and the Troubleman

Continuation of a Series of Articles Begun in the September 7 Issue of Telephony—They Deal in an Elementary and Explicit Manner With Many of the Problems Encountered by Telephone Men in the Operation of Small Exchanges

By A. E. Dobbs

"Mr. Wilson, what makes this sizzling sound in this transmitter?" exclaimed Will one day while making a test when George was in the shop. "It keeps sizzling like the fuse of a firecracker, or rather like frying meat."

"Are the connections in the transmitter circuit all right?" asked George.

"Yes, I'm sure of that."

"Have you had the transmitter apart?"

"No. Do you think the trouble a loose contact there?"

"Well—perhaps so. Leave your receiver off the hook for five minutes and then listen."

"What good will that do?"

"The best way to find out," rejoined George, "is to do as I tell you, first, and I'll explain afterward."

Will Hasn't Learned it All Yet.

Will lifted the receiver off the hook, and a few minutes later George picked it up himself and listened. Putting it down, he went on examining some of the other instruments. In about five minutes he picked the receiver up again, and after listening handed it to Will.

"Why, the sound is almost gone," the latter announced.

"Yes," responded George, "change the transmitter."

Will did so, and the new one made no trouble at all.

"Now, you promised to tell me what was the matter with that other one," reminded Will.

"Yes," answered George, "so I did. That is an old style transmitter and was made for one cell of battery, and two cells are too much for it. You could get the same effect by putting four or five cells on the ordinary transmitter."

"But is there no way to make this transmitter over, so that it could be used with two cells?"

"Yes, provided you can separate the front and back electrodes and put in more granular carbon."

"What is an electrode?" asked Will. "When you spring any new words on me like that, you should also give me a diagram of them."

Will Strikes an Interesting Subject.

"An electrode in this case, is a terminal plate or disk, by means of which current is conveyed to or from another terminal or disk. In the transmitter the front disk is one, and the carbon block in the back is the other electrode. In a battery they would be the carbon and the zinc. In a static machine, the two knobs or disks, across which the sparks pass. In a medical battery, the name is generally applied to the handles of the machine. During a thunderstorm, the earth is one and the cloud the other electrode of a condenser.

"Of course, one electrode is always supposed to be positive and the other negative."

"What made the transmitter stop sizzling?" asked Will.

"Because the battery weakened from use," replied George. "But to continue, a battery too strong for the transmitter produces a weak voice current, just the same as though it were not strong enough. The reason for it is that a current too heavy will bridge over the different carbon particles in much the same way it bridges the two carbon points in an arc light. That is what makes the frying noise you heard. There may be current enough for several tiny arcs in the carbon mass."

"What should the resistance of a transmitter be?" questioned Will.

"That," responded George, "varies within very wide limits. A Blake transmitter, in good condition rarely has over 5 ohms, usually less, while another manufacturing, with a view to saving battery, uses a hard, high resistance grain carbon, and gets a resistance of from 70 to 80 ohms, and both are good talkers.

"A Bell solid back transmitter measures very much lower. The ordinary Hunning's type varied from 15 to 40 ohms, and I have found them as low as 7 ohms. Sometimes I may show you a table of measurements I made of some of these instruments."

"Then it really does not matter what the resistance of the transmitter is?" surmised Will.

"Yes, it does," answered George, "but there are several elements that enter into the combination. For example, a Blake transmitter is very sensitive and reproduces more exactly the tones of the voice than any other, but it could not be used with more than one cell of wet battery. For that reason it was used with a small induction coil as one cell could not furnish current enough to saturate a long coil, and hence could not be used on long distance work.

"There have been many treatises written on the subject of the induction coil, but they are of very little practical value. Thus, if you read the work of one certain eminent electrician on the subject, you come to the conclusion that a short 250-ohm coil is just the thing for all around work. In the early days of Independent telephone manufacture, many were mislead into the use of that kind of a coil, and many instruments were, no doubt, condemned on that account.

"The simple fact was that the eminent electrician had performed his experiments with a certain class of instruments, which, applied to instruments of a different make, were not reliable and could only be used as a guide. Then another eminent electrician, for whom I have the highest regard, wrote a series of articles on the induction coil and transmitter. They were loaded down with equations and foreign phraseology, and in the end he experimented until he found what he wanted and settled on coils of a certain size, likewise adapted to a certain class of instruments. So, after all, the best way to find the right coil for a certain transmitter, is to make up a dozen or two and find out the one best adapted to it. Variations in the length or size of the iron core demand variations in the amount of wire wound over it. The same may also be said of the battery strength."

Will Quotes a Chestnut—George Delivers a Lecture.

"Theory does not amount to much alongside of practical experience, does it?" remarked Will.

"Now don't spring that old chestnut which you have heard some narrow-minded fogy use," said George petulantly. "Of course, if your ambition does not prompt you to go any further than to merely hang on to the job you have, well and good, let theory alone, and I'll quit teaching you and let you find out all these things as best you can, or remain ignorant."

"Why-y-y-y," stammered Will, surprised at this sudden outburst, "you are a practical man and you know more

about telephones than those professors up at the college who teach electricity; besides, Edison is not a great theorist, they say."

"Now, see here!" George exclaimed impatiently, "there are some people who repeat what they hear like parrots, and have no brains to do their own thinking with. Such people will repeat that the ancients knew as much about art and science as we, because they knew how to embalm the dead; that a despot with a half a million slaves at his command built the pyramids; and the Greeks devoted all their time and treasure to carving statues of their gods, while they plowed the ground with forked sticks, threshed their grain with the feet of oxen and regulated their undertakings by the flight of birds. It is said that some Greek invented a steam engine, but it was never anything more than a toy and never did a pound of work. James Watt would have made that engine useful.

"It is also said that the Chinese once had a steam carriage. Well, they took good pains to forget all about it, if they ever did, which does prove that they have great minds. 'Tis true, they invented gunpowder, but the only use they ever make of it is for firecrackers, while part of their armies are still equipped with bows and spears. Then such people tell you that Edison is not a great theorist. There is not in the world a better posted or more practical theorist, but he does not waste his time in useless flights of fancy or invent things for which there is no use.

"Then again, you hear that electricity is only in its infancy. As a matter of fact nearly all the laws and formulae under which modern development has taken place were discovered by theorists more than 50 years ago. When people became educated up to them, the inventions followed as a matter of course. These same people will also tell you that a theorist is of no practical use to the world, and straightway other people who take their thoughts ready-made repeat it over and over again, until they really believe it, in spite of facts to the contrary.

"Now, young man," went on George, "just let me tell you right here that if you want to learn the business, you must study theory and acquire lots of it. Never fear that you will learn too much. Theory, after all, in these days, consists in rules and formulae based on observed facts, and present day theorists are extremely practical men. Of course, you must not suppose that a single theory or formulae can be made to meet all conditions, but if you are well grounded in your theories you know how to meet different conditions as they arise. A clodhopper plods along in the same old rut until some theorist comes along and shows him a better way. So learn all the theory you can —you won't get too much of it. Read books, read the electrical papers, and remember what you read; study dynamos and motors, for they will help you to understand telephones; study batteries, for you have to deal with them all the time; study telegraph circuits, for they will help you to comprehend common battery and lock-out systems, and show you where some alleged inventions come from; study mathematics, for you will find times when you cannot progress without them; study drafting, for it adds to your usefulness in any position; and all of these studies taken together will make you a good telephone man. Then, if the telephone business plays out, you will be well equipped to take up something else. The man who is constantly endeavoring to improve himself is the one who wins nowadays."

(To be continued.)

Practical Telephony for the Practical Exchange Manager

A Series of Articles Relating to the Construction, Maintenance and Operation of a Moderate Size Telephone Exchange, Which Began in the Issue of September 21, Expressed in Everyday Terms, Easily Understood—Principles Easily Applied

By H. R. Van Deventer

The troubles peculiar to the so-called series common battery circuit using the direct current receiver have already been referred to. This is the most simple and easily understood circuit extant and, no doubt, will in time supplant all others.

There are, however, several other circuits in extensive use and the troubles peculiar to them will be mentioned briefly. The first of these is the standard inductive coil circuit employed by the Western Electric Co., and extensively used in Bell exchanges. A diagram of this is given in Fig. 37-*A*. A description of the induction coil, the number of turns and direction of windings and other data can be found in several of the books on telephony. In this set the two mf condenser is necessary, as less capacity will affect the transmission, the condenser being in the talking circuit as well as in series with the ringer. Many troublemen suppose the condenser to be used only for keeping the battery from flowing through the ringer. Such is not the case or a smaller capacity would do under average conditions, especially where ringing frequencies of 33 cycles are employed, which is now often the case.

Of course a two mf condenser insures good ringing over a long line even when a hand generator, slowly turned, is employed. But such conditions are now seldom met with.

Disregarding the ringer and transmitter troubles which will be taken up later, these sets are subject to certain troubles due to wrong connection of the coil. Cases of this kind should be carefully investigated, as the set will talk but not efficiently, if the coil is connected up backward.

In desk sets care should be taken to so adjust the hook contacts that the pair marked *X*, Fig. 37-*A*, make before

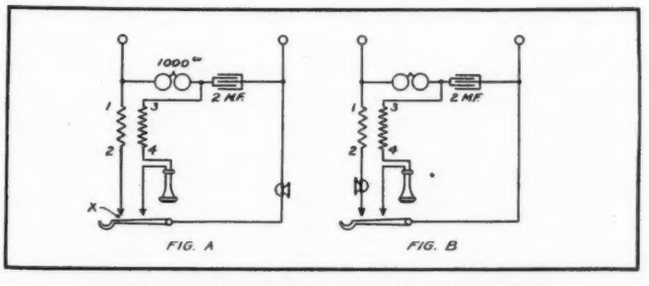


Fig. 37. Wiring of Bell Common Battery Sets.

the contact carrying the receiver circuit and break after the receiver contact opens. This will, to a great extent, eliminate the annoying click in the ear often complained of by subscribers, especially those given to "flashing the operator" for a number of calls in rapid succession.

As in this circuit the transmitter circuit is separate from

the receiver circuit, the set can fail to transmit without affecting the receiving and vice versa, which is quite different from the series circuit. From this description it will be seen that a broken receiver or open receiver will only affect the receiving, the same as on a magneto telephone.

Considering the terminals of the outside winding of the coils to be numbered one and two, the coil having a resistance of about 17 ohms and the inside winding to have terminals three and four and a resistance of about 27 ohms, if the positions of the windings are reversed, transmission will be decreased about 50 per cent.

If terminals one and three are reversed, the transmitter and receiver will be in series with the 27-ohm winding of the coil and the set may talk fairly well, but there is always danger of demagnetizing the receiver. To locate this condition, reverse the line wires which will increase or diminish the pull on the receiver diaphragm. If terminals two and four are reversed the effect is the same as in the case of one and three, being reversed. There is an absence of side tone under both these conditions of reversal.

"Side tone" is that peculiarly sensitive condition particularly noticeable in this circuit, wherein the transmitter "picks up" whatever outside noises there may be and repeats them in the receiver of the same instrument. It is possible to reduce this somewhat by removing the transmitter from the local circuit and placing it as shown in Fig. 37-*B*. Many Western Electric sets are wired to enable this change in circuit to be easily effected but it should not be done unless the place where the instrument is located is very noisy, as the connection reduces the efficiency.

A very simple and quick test to see if the coil windings are reversed, is to take the receiver off the hook and hold a nail or other small piece of iron near the core of the coil, and short circuit the condenser. The pull of the core should increase. If it diminishes, the connections of the windings are reversed.

When a coil is apparently open, examine the ends of the windings where they join the terminals. Often these wires are broken off or the circuit wires are attached by "resin joints" instead of solder. This seldom happens in new sets but often occurs in old ones where various troublemen have made repairs. The remedy is the replacement of the coil. Avoid trying to splice out the fine wire of the coil and especially the application of soldering paste to the terminals. Where paste is used on terminals in wood or fibre coil heads, and it should never be used except in emergency, wash off with alcohol or gasoline.

Occasionally a coil will be found from which the covering has been eaten by roaches, etc. When the new coil is put in, give the instrument a liberal dose of some sort of insect powder or it will soon be destroyed. The roaches go after the paste with which the cover is attached. In tropical countries this is quite a common trouble. The bell coils are often similarly affected. Shellac or a paste containing carbolic acid, used instead of the flour paste commonly employed, is a remedy for this trouble.

Troubles Found in Transmitters.

The transmitter is the next part of the instrument to be considered. The troubles inherent in transmitters are:

a. Packing or a gradual cessation of ability to transmit.

b. Frying or sputtering.

d. High resistance much beyond the intended range.

e. Disintegration of the rubber, packing, or insulation used.

c. Corrosion of the diaphragm and parts.

There are other troubles peculiar to certain makes. These five are, however, common to practically all makes, being practically absent in some which may only develop one or two, while others may have them all. Some transmitters develop one or more of these troubles after a short use, while others last for several years. Most of these troubles are due to the natural limitations of the materials employed.

The first trouble *a*, is usually due to design and material used and cannot be remedied by the troubleman. Packing is manifested by the subscriber's inability to make himself heard, especially at the beginning of a conversation. Suddenly the telephone becomes O. K., especially if the transmitter is struck with the hand. If a millivoltmeter is placed in series with the transmitter and the line connected to a cord circuit, the voltmeter needle will gradually drift to the right, showing an increased current flow when the transmitter is allowed to come to rest. The maximum deflection on a packed transmitter will always be greater than with a good one.

The action of the meter with a good transmitter is most peculiar and must be carefully studied. The needle at first will indicate a maximum current flow, then as the transmitter is allowed to come to rest the needle will hesitate, as it were, and finally start toward the left, indicating an increase in the resistance of the transmitter and consequent "unpacking" or separation of the carbon granules. If the transmitter is allowed to remain perfectly quiet, the needle will finally come to rest at a certain point that is, however, not the extreme point at which it would rest if the transmitter were packed. Just how far this normal point is from the packing point, depends upon the make of transmitter and it even varies greatly with transmitters of the same make.

Lay a watch on the writing shelf of the telephone, leave the receiver off the hook for 20 minutes. If the ticks of the watch can no longer be heard and if a cautious tapping shows the transmitter to be "dead," it is packed. A good transmitter will still show sensitive at the end of 20 minutes, although this is a severe test. The cord circuit should be plugged on the line during the test.

Some partition walls, especially in factories, have a periodic vibration which will pack any transmitter. Any steady tapping or vibration has a tendency to jar or settle the carbon in the cell and to pack it together. The remedy is to move the telephone.

Where the telephones are near wireless stations, the transmitters sometimes act as coherers and the carbon becomes like a solid mass while the wireless is working. If the carbon is absolutely non-magnetic, this is not liable to occur but such carbon is rare.

There is no remedy for packed transmitters. They must be replaced.

(*To be continued.*)

New Maryland Company Formed.

Stockholders of the Farmers' & Merchants' Telephone Co., which controls the telephone service in Caroline, Talbot and Queen Anne counties, Maryland, and of the Peninsular Light & Power Co., which supplies the electric service in Denton, Greensboro and Ridgely, in the same state, have organized a new corporation to take over both of these concerns, reports the Electrical World.

The new corporation is known as the Farmers' & Merchants' Telephone & Electric Co. H. M. Thompson, of Hillsboro, manager of the former telephone company, has been elected president of the new company, and Rev. G. S. Rairigh, who was president of the old telephone company, has been made vice-president. The capitalization of the Farmers' & Merchants' Telephone & Electric Co. is $175,000.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Western Union-A. T. & T. Suit Decided.

Litigation which has been pending about 30 years has been ended by the United States Circuit Court of Appeals, which dismissed the cross-appeals in the suit of the Western Union Telegraph Co. against the American Bell Telephone Co. for an accounting under a contract made in 1879, by which the plaintiff transferred all its patents connected with telephone instruments to the company in consideration of the latter's agreement to pay it 20 per cent. of all rentals and royalties received from their use.

The report of Everett W. Burdett as special master was confirmed by Judge Colt, now in the United States Senate, and an appeal was taken by both sides from the decree of the judge. By decree of the district court, which is affirmed, the telephone company is ordered to transfer to the Western Union Telegraph Co. about 18,000 shares of stock in 19 subsidiary Bell companies, and in addition to pay the telegraph company $3,141,529.11, representing dividends and interest on that stock.

The litigation has been stubbornly contested at every stage. At first the Bell company won, but the circuit court of appeals reversed that decision of the circuit court, which had confirmed the report of a master, and the second trial, before a new master, resulted in the decision against the Bell company, which is upheld by the appellate court.

The companies owned conflicting patents for telephone instruments, so a contract was made in November, 1879, by which the Bell company acquired a monopoly of all the telephone patents. At that time the Bell company had short-term agreements with several subsidiary companies under which the latter paid an annual rental for its patents. On the expiration of the short-term agreements the Bell company gave perpetual licenses to these companies on a payment of an annual rental.

In 1883 the Western Union learned of the new form of agreement which the Bell company had made with the subordinate companies and demanded its share of the stock. Suit was brought by the telegraph company for an accounting on the ground that it was entitled to its share of the stock. The court also held that the stock was part of the rentals or royalties received and that the telegraph company was entitled to its share.

An appeal to the United States Supreme Court is considered probable.

San Francisco Rate Initiative to Proceed.

Judge Prewett, at San Francisco, has handed down a ruling to the effect that the vote to establish a schedule of rates for the Pacific Bell company, in that city, must proceed. The ordinance will appear on the ballot at a special election to be held April 22.

Judge Prewett heard the arguments, in the absence of Judge Seawell, who as a telephone user regarded himself as disqualified. He vacated a temporary injunction the telephone company had obtained to prevent the election board from placing the proposition on the ballots, denied a permanent injuction, sustained the demurrer of the city, which was argued by Assistant City Attorney Haven and Theodore A. Bell, and held that the telephone company may not amend its complaint.

The corporation has the alternative of appeal, but, according to law associates of Mr. Bell, the same question only could be presented and the appeal would avail nothing. It was also stated that the federal courts are closed, as no national constitutional question is involved.

Will Not Disturb Detroit Merger.

Jurisdiction of the Michigan Railroad Commission in authorizing mergers of competing telephone companies remains unimpaired, in so far as any court action in this state is concerned.

The supreme court, at Lansing, has now confirmed the action of the circuit court of Ingham county in dismissing the case of the Grass Lake Telephone Co. against the Railroad Commission last summer.

Shortly after the commission had authorized the merging of the Home Telephone Co. with the Bell, in Detroit and adjacent territory, a bill was filed by the Grass Lake company, asking that the merger be set aside.

It was alleged that the commission had no right to authorize the merger of the two larger companies, and the suit was in effect an assailment of the law which gives the commission power to supervise and control telephone companies.

Affidavits from a stockholder of the Home Telephone Co. were presented by the Grass Lake concern as a part of the evidence brought to show that innocent parties would suffer from the merging of the Home and the Bell organizations.

Judge Wiest, of the Ingham county circuit court, dismissed the bill, and an appeal was taken to the state supreme court.

Indianapolis Company Must File Report.

The Indianapolis Board of Public Works has directed William Fortune, president of the Indianapolis Telephone Co., to submit an itemized statement of expenditures made since March 1, 1909, in the improvement of its plant and service.

On February 28 the board granted an extension from March 1 to April 2, 1913, for the company to complete the expenditure of the $500,000 investment required in its franchise, and following many recent assertions that the company in the last four years had not actually spent the amount of money the board of works has been given to understand it has expended, the itemized statement has been called for.

According to figures given by the telephone company, it has spent $467,249.10 in the establishment of its actual physical plant and business, and, if the board requires the immediate fulfillment of the franchise provision for the expenditure of at least $500,000, the company has argued that it would be required to spend more than $30,000 to no definite purpose.

Would Force Interchange in Hotel.

To apply the "common user" principle to the wires of the Pacific and Home Telephone companies in the Oregon hotel in Portland, is the purpose of a complaint just filed with the Railroad Commission by the Wright-Dickinson Hotel Co. It is alleged that the Home company is agreeable to such co-operation, but the Pacific company absolutely refuses.

Both telephone companies have a switchboard in the

hotel lobby. The hotel company pays the companies a monthly rental for the number of telephone instruments installed and the trunk wires used, and in addition pays the expenses of operating the hotel switchboards. The complaint points out that the switchboards are located close together and that it would be practically no trouble or extra expense for the calls coming over the wires of one company to be connected with the instruments of the other company.

"It would simply require the lengthening of the cords connecting with the trunk lines of said respective switchboards to such length that they can be plugged into the other switchboard," says the complaint. "A portion of the cords mentioned on the switchboard of the Pacific Telephone & Telegraph Co. were of sufficient length to make such connections, but they have been knotted in such a manner as to shorten them to such an extent that the same are not of sufficient length to make such connections, but the knots therein can be easily unraveled."

The complaint states that the rooms of the hotel are equipped with the telephones of the Home company, and the hotel company wants to compel the Pacific company to switch calls over its lines for guests of the hotel to the lines of the Home company.

Oklahoma Commission Against "Zone" Rates.

The Oklahoma Corporation Commission, in a case from Chickasha, which indirectly affects all of the larger Oklahoma cities, has placed its disapproval upon the employment of "zones" by telephone companies as a basis for fixing rates. The commission in its order fixes the following schedule of rates to be charged for all subscribers in Chickasha by the Pioneer Telephone Co., on and after April 5: Business houses, $2.50; residences, $1.50; party lines, $1 per month.

The commission finds that the present residence rates vary from $1 to $1.75 per month and that this apparent discrimination is justified by the Pioneer on the ground that it has divided the city into zones, according to the distance of the subscriber from the central office. The commission takes the position that "zones" should be disregarded and that charges should be the same in all parts of the city for the same service.

The commission has ordered the Central Oklahoma Telephone Co., which has an exchange at Okeene and gives long distance service out of that town, to make physical connection with the Mutual Telephone Co., which also has an exchange in the same town. The commission finds that owing to the fact that there are two exchanges in Okeene most of the local subscribers, not desiring to keep up two telephones, ordered the instruments of the Central Oklahoma company taken out, with the result that the latter company has practically no local business for which it receives pay, but conducts a long distance business out of Okeene.

E. E. Cressler and other residents of the town filed a petition with the commission asking that they be given the benefit of this long distance service from the telephones of the Mutual company. The prayer is granted and the commission orders the service to begin April 5.

Ohio Commission Issues Telephone Rulings.

The Ohio Public Service Commission has authorized the purchase, by the Athens County Home Telephone Co., of the lines of the Athens County Long Distance Telephone Co. The long distance company is already controlled by the Home organization. The transaction involved the payment of $6,000.

The commission has also granted permission for the Farmers Telephone Co., of Sidney, Ohio, to issue $11,840 additional stock and $10,000 6 per cent. mortgage bonds. The proceeds are to be expended in extending the company's system in Sidney and elsewhere in Shelby county. As reported in these pages last week, the commission had just previously authorized the Farmers company to extend its lines in the field named.

Court Sustains New Jersey Commission.

The New Jersey supreme court, in an opinion handed down by Justice Minturn, has dismissed the writ of certiorari and refused to grant a mandamus to compel the Board of Public Utility Commissioners to authorize the Interstate Telephone & Telegraph Co. to issue $1,525,000 worth of 30-year 5 per cent. gold bonds.

The commission refused to grant the permission on the ground that there was no reasonable warrant or expectation that the company would be able to pay the interest on such bond issue.

Orders Fayette Company to Remove Poles.

The Fayette county fiscal court has, by a vote of 6 to 3, ordered the Fayette Home Telephone Co., Lexington, Ky., to remove its telephone poles and wires from the roads of the county by November 15, and directed that if the poles and wires are not removed by that time the county attorney shall take whatever steps shall be necessary to compel their removal.

Statement of Telephony's Ownership.

Statement of the ownership, management, etc., of TELEPHONY, published weekly, at Chicago, required by the Act of August 24, 1912.

Note—This statement is to be made in duplicate, both copies to be delivered by the publisher to the postmaster, who will send a copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the post office.

Name and Post Office Address—

Editor, H. B. McMeal, 4147 Drexel Boulevard, Chicago.

Managing Editor, R. H. Holbrook, 3921 Rokeby street, Chicago.

Business Manager, H. D. Fargo, 4932 Kenmore avenue, Chicago.

Publisher, Telephony Publishing Co., Monadnock block, Chicago.

Owners: Names and address of stockholders holding 1 per cent. or more of total amount of stock:
H. B. McMeal, 4147 Drexel boulevard, Chicago.
H. D. Fargo, 4932 Kenmore avenue, Chicago.
I. B. Lipson, 4947 Vincennes avenue, Chicago.
E. M. McMeal, 4147 Drexel boulevard, Chicago.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of the total amount of bonds, mortgages and other securities:
F. S. Kenfield, Augusta, Mich.
E. J. Baker, 410 Diversey Parkway, Chicago.

(Signed) H. D. Fargo, Business Manager.

Sworn to and subscribed before me this 20th day of March, 1913.

Walter Brown,
Notary Public.

(My commission expires June 3, 1914.)

Publicity in Various Forms for Telephone Companies

What Is the Best Kind of Publicity?—How Should It Be Planned and Carried Out?—Newspapers Advised as Most Profitable Medium—Address by Representative of Taylor-Critchfield Co., Advertising Specialists, at National Convention, in Chicago

By Bayard W. Borten

I imagine you all represent other businesses and industries besides the telephone business. But we meet at one point at least, and that is in our effort to give service. That is about all an advertising man has to talk about, and that is largely the main thing that you have to consider, too—the giving of service. A telephone without service back of it is not worth very much. We all appreciate that and I shall try to sketch broadly the fundamental principles that may perhaps assist you in bringing to the public attention—your individual public and the public at large—the advantages of the service you have to offer.

Work for Quality Always.

Advertising is merely persuading people to accept what you have to offer. Whatever advertising you do, have it of good quality. It may be newspaper work or it may be direct publicity in the form of circulars or follow-up letters, booklets or blotters. But whatever it is, let it be of a high standard, so that it reflects your aim of service. A cheap, shoddy piece of advertising stands for a cheap, shoddy article or cheap, shoddy service—whatever you are trying to have it represent.

The medium that is most uniformly adapted to the organization here is, doubtless, the newspaper. Of course, in a general way, that means every issue, large and small, because wherever there is a town large enough to have a telephone service, there is a paper which circulates in that territory, whether it is published in the town or not, and there is no more universal medium that can be safely adopted.

At the same time that is only, I should say, the basic medium for consideration. It needs the backing up of further means, but the newspaper would naturally be the first consideration because it is suited to all classes in the town. I am not an advertising solicitor, so I would not know just how to solicit any of you for space. I have devoted most of my attention to means of filling that space in the way of preparing copy, design, etc., and I find that the most effective copy is what we call a combination of the poster value and the "reason-why" copy.

That is, every advertisement, no matter how small it is, should have the central thought in it, in large enough type and big enough display to catch the attention and tell its story, whether the person actually reads the advertisement or not, because there is a certain element of people who do not read the advertisement consciously, but whom you can catch with your display line. There is another type that will read, and those want more information than you can give in a few display words; consequently, you want to back up your display with a few pungent reasons for your service. I would rather have ten arguments, for instance, in six-point type—a small type—than ten arguments in ten-point—because it needs more than the mere attention to persuade. You want the attention. You have to have that, that is true; but you need to back that up with persuasion when you have the attention.

Brevity is not only the soul of wit, but it is an essential in advertising. However, do not use brevity at the sacrifice of complete meaning and a thorough statement of at least one chapter of your story.

Speaking of brevity, I am reminded of the best example of brevity that I have come across lately. I was reading something about Milton. One of the anecdotes told of his experience at Oxford. He was a boy of 14 and one of the big prizes of the year was for the best essay written on the subject of the miracle of Christ turning water into wine. It was a big plum for the boy who attained this prize and everybody was working tooth and nail, and many of them were burning the midnight oil. Everybody noticed that John Milton was taking things coolly. When the time came to hand in the papers he handed in his. It was nothing but a little slip of paper, but when the award of the prize had been made the professor announced that John Milton had won it.

Instead of writing reams of stuff trying to explain this miracle logically or scientifically, Milton had written: "The conscious water saw its God and blushed."

I have that essay of Milton's over my desk as a reminder of brevity without sacrifice of meaning.

Avoid Flashy Designs.

Designing is a thing that is often overdone. In other words, if any of you have not the time to give to advertising to formulate a plan of your own and you are dependent upon someone of whose judgment you are not sure, avoid the flashy, scary designs used simply to have something there.

As a matter of fact, in preparing newspaper copy very few advertisers appreciate the value of white space. You will notice most of the papers are filled with a lot of heavy black designs, and really the type matter which is set off with a little white border around it looks not only dignified, but it has more attention value than if it had a great big, black border around it that suggests a mourning announcement of some sort.

These same principles apply not only to newspaper advertisers, but to the making up of pamphlets or of circulars or anything else that you may need.

I do not think that circulars are used as much in the smaller communities as they might be to good advantage. You may make excellent use of a large sheet folded several times and mailed under a one cent stamp, which really attracts more attention and tells the story to better advantage than the form letter in many cases.

Folders Better Than Form Letters.

The form letter, or follow-up letter as it is commonly called, fools people very seldom nowadays. They all know it is a form letter; it is not a personal thing, and you might just as well come out frankly and say that you are sending out your methods broadcast.

Advertising is not a thing that needs to be hid under a bushel. We are not afraid to admit that we are advertising. We might as well let people have our methods in the most readable and attractive form rather than try to get under cover, so to speak, with an imitation personal letter.

At the same time, in restricted communities where letters can actually be written, they are of value and your own judgment will dictate in those cases. I am only outlining the broad issue.

The fundamental thing that appeals to me about the proposition that all of you represent is the independence. You have a delicious morsel of advertising material there which I think almost any of us could win out on and do some pretty strong and persuasive stuff with. There is a conscious or un-

conscious antagonism in all of us toward the combination and, as you represent independent efforts, individuality, the personal element more or less, you have a universal appeal that should not be lost sight of. It need not be used as a direct offset to the other service, of course. But if we keep strongly before the people that we are representing the Independent service I think that we have a basic principal that will give us a large measure of good will right at the start.

I was much interested in the shield as an emblem. I am very enthusiastic over the idea of adopting it universally. The first impression of it affects me that way. I have not had an opportunity, I am sorry to say, of studying the telephone service advertising possibilities as closely as I might. I have just returned from the South, where I was in a little post office town that did not have a telephone, and I am more enthusiastic than ever over what telephone service means. I felt absolutely lost for a month down in southern Alabama in a little town that had no telephone connection with any city. So I see more clearly than ever the vast possibilities of the advertising appeal in telephone service.

We have had some experience with it in the past in the farm papers and we have been very successful in getting inquiries showing the wide interest in the farm section in Independent lines in a small way. I do not see how any product that is advertised today has a larger or a broader appeal than telephone service. When we stop to think that men are advertising shoe laces in national mediums and making a success of it, we certainly ought to be able to advertise telephone service and make a success of it—something that everybody needs at some time or other.

It is surprising how small an audience one needs to make advertising effective. I have watched that, for instance, in the Saturday Evening Post, which has a circulation of over two million and consequently a tremendously high rate. Yet we can advertise a product there which will appeal to very few thousands. I have one product in mind which could not appeal to more than a thousand people in the United States and yet we paid for reaching the two million in order to reach that thousand in a new and distinctive way, and the first insertion paid for the whole year's appropriation in that medium because it brought us one order that took care of all the advertising. I only cite that as a case in point.

Newspaper Not a Wasteful Medium.

So many people look upon the newspaper as being a wasteful medium because it reaches so many that would not be possible prospects, for instance, for a telephone; but scientific analysis, which I could not go into here, and really do not know so much about, has demonstrated that the possible percentage of newspapers in any given field makes the newspaper one of the most economical means, if not the most economical means, for covering the territory.

There is a good deal of waste in advertising in novelty and just-for-the-moment material that advertising men or solicitors get away with because it looks attractive and clever. As I say, you need attention and the little attractive clever thing will get your attention, but it will not in itself sell telephone service. You must have the element of persuasion there.

Most money is wasted where you do not get your methods to the people, your reasons why they should have a telephone, your argument that will really convince them that they cannot afford to do without it. There are so many good arguments that you need never run out of them and it is a shame not to use them and to spend money on things that only get attention for the time being.

Another thing is the matter of repetition. You might give a novelty of some sort, or a picture card to someone that would please him ever so much for a minute, but unless you give him another one he is going to forget it. There lies the advantage of the newspaper or the well-conducted follow-up system of circulars, etc. The repetition of your argument, the constant reminder eventually brings a person to the point of coming over into the service.

That is where the poster value of advertising comes in. You have it on the billboards, for instance. You do not get any argument there to speak of, but you get a constant photograph on the mind of this product, this thing, which eventually makes an indelible impression, and the first opportunity the person has to get it he will automatically turn to that thing which has been before him day in and day out, or week in and week out, as the case may be.

Constant, Persistent Advertising Pays.

Unless one has enough money to map out a specific definite plan he had better not spend any until he gets to a point where he can spend enough. That is, a little spasmodic advertising, here and there, is not going to have the effect that a consistent, persistent campaign will have, even though it is of short duration.

Make it consecutive; make it carry its message from beginning to end; keep it before the people constantly for the time being even though you have to drop out for three months and then go back for three months. A good deal more money is wasted by not enough advertising than is ever wasted by too much.

I am sure that all of us are convinced that the telephone will stand it and that we have the lead of all others in the Independent service idea, and particularly, I might say, because I know that best, in the case of the automatic, which is independent automatically of the principal element in the service.

I think the Bell people are doing a good work in their advertising in their broad national campaign, simply by, to a certain extent, alleviating the natural antagonism that has grown up against all big organizations of that kind. There is no doubt that they are holding back or retarding the general antagonism throughout the country by that advertising.

But you have the better material to work with, and while you are not in a position to use national mediums, there are many other mediums that you can use, and I want to see you use enough of them.

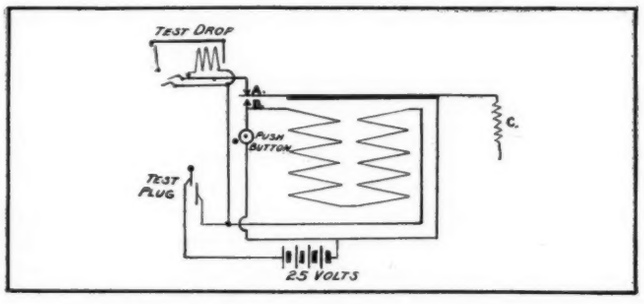
Mr. Critchfield tells a story of a dear old New England mother who had been brought up on a New England farm where the land was very niggardly in its productions. She had a big family and a small place and her life was one wild scratch after enough to feed her children and clothe the family. One by one the children grew up and left her. Finally she reached old age and the last daughter went away and got married. She was still scratching to make a living. The daughter, who had married a rich New Yorker, asked her to come down to their new home on the Sound and, after much persuasion, she left this little restricted spot where she had lived all her life and went to visit her daughter at the beautiful country home which overlooked the Sound. After greetings all around she took a chair and sat on the porch and simply looked over the ocean, and looked and looked all the afternoon. Seemingly she could not get enough of it. As the sun went down she clasped her hands and said, "Lord, I thank thee for showing me something of which there is enough."

So that is the burden of my song. Get enough advertising of the right quality. The character of it, that is, the medium used, is not so essential. You cannot go wrong. But do not spend money on cheap stuff. Get good printing, good pictures, good paper and make it show quality all the way through, such as you want to represent your service, your quality of service.

Practical Subjects—Letters and Discussions

Testing Magneto Telephone Lines.

It is usually necessary for the troubleman of the magneto telephone exchange to carry with him a cumbersome magneto if he wishes to call the central operator from any place on the line other than the subscriber's station. With



Circuit for Magneto Exchange Line Testing.

the following equipment at the exchange, his test set, composed of only a receiver and transmitter, will slip into his pocket.

The equipment consists of a combined drop and jack, a push button, a test cord and plug, and a high resistance relay connected with a 25-volt battery. Any vacant drop on the board may be used for the test drop. The test plug and push button should be mounted within easy reach of the operators. The battery and relay may be mounted in any convenient place, as, after the first adjustment, it will need but little care. The relay is made from the coils of a 1,600-ohm ringer with an armature mounted above them. This is hinged at one end and the other end when in normal position, rests against contact *A*, being held there by the adjustable spring *C*.

In the consideration of line trouble, let us deal first with the metallic line in which the two line wires are both normally clear from the ground and connected at the subscriber's station through the bell coils of the instrument. Troubles on this line will consist, first, of opens, in which the continuity of one or both sides of the line is electrically broken. It will be evident that, if the test plug is inserted in the jack of such a line, no current will flow from the battery since the circuit is broken by the open line. But should the troubleman place his test set across the line between the break and the office, then the circuit will be completed and the shutter of the test drop will fall. The operator plugs into the jack and is in communication with the troubleman.

As a second case, take a short circuited line. It is evident that if the test plug is inserted in the jack of this line, current will flow through the line and the test drop will fall. Suppose now that the operator presses the push button. Current will flow through the coils of the relay and the armature will be pulled down, opening contact *A*, and closing contact *B*. When the button is released, the armature remains down, current flowing through the coils through contact *B*. But should the lineman open the circuit between the office and the short, then the armature will be released and contact *A* will be closed. He is then able to call the operator by placing his set across the line.

As a third case take a metallic line in which one or both sides are electrically connected with the earth. When both sides are grounded, the line may be considered as short circuited. If grounded on one side only, it will be necessary to ground the other side. For this purpose, a flexible cord with convenient clips should be near the distributing frame. Should one side of a metallic line become crossed with a second line, the second line may be considered the same as a ground. Therefore connect the other side of the metallic line to the second line, thus throwing a short across the line.

On some exchanges only one line wire is used, the other side of the circuit being the earth or a common return. On a line of this kind, a cross with another grounded line is really a resistance ground and may be handled as such. Should the cross be with a metallic line then it is better to use the metallic line for the test.

Dunlap, Ia. LESTER D. MEYERS.

Letters from a Retired Lineman to His Nephew.

Podunk Valley Farm.

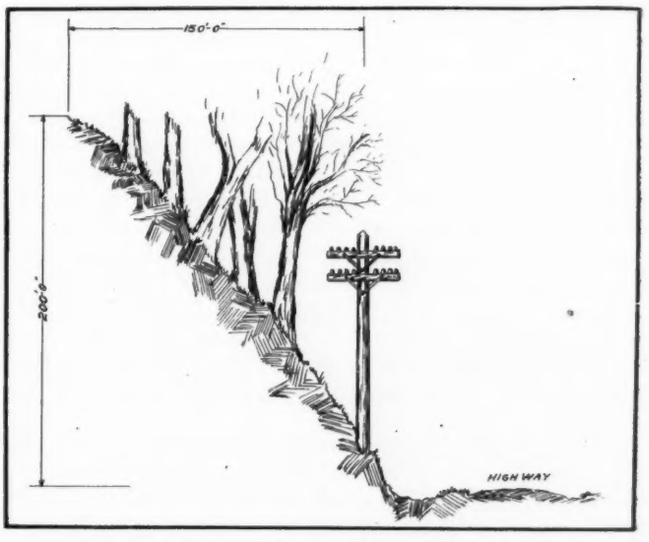
Dear Ben:

I don't know how much of a letter I'll be able to write for the kiddies have a basket holding seven kittens and the old cat, here in the room. The kittens are a week old, but they can't get old too quick to suit me. I need their assistance. I suppose now I'll have to tell you the "rest on it," as old man Dyke says.

There's been a grain elevator in town ever since the town started, and this is the first winter it has been empty. Heretofore it has always been the general headquarters for rats. They always appeared fat, sleek and contented. But about Christmas I guess they were pretty hungry and began to forage through the town. They soon overrun the place and the women folks were timid about going into the cellars. Finally they strayed down as far as my place. The barn is overrun with them.

Everything on earth has been tried to rid the town of them. That is everything except Doc Stuver's prescription which is an "industrious breed of cats." Some folks consider Doc an "old fogie" except when it comes to a case of sickness, and as soon as he commenced preaching "cats," the cat question was settled.

But I've got faith in Doc, so when I was over at Bab-



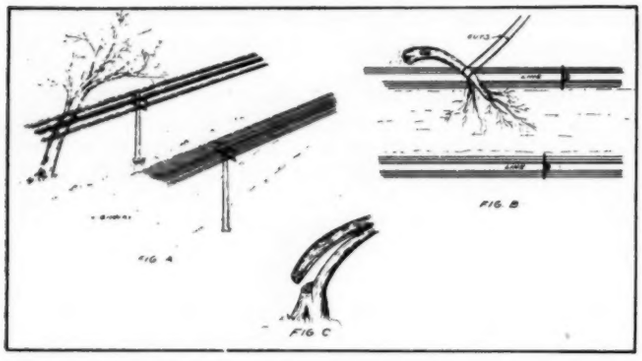
A Falling Tree Would Tear Out a Section of Line.

bitt's Run yesterday I got hold of a cat and seven kittens. Doc says not to pet them but keep them wild, and feed them nothing but a little milk twice a day to keep them on the place.

Up town the rats are so bad that everyone who can han-

dle a gun is out hunting them nights with a searchlight. It's got so people don't sleep much nights. They sleep when the rats sleep—by day.

But the biggest joke of all was played last Wednesday night. Armed men and boys were prowling through alleys,



Tough Tree Cutting Proposition—Sawing Done on Wrong Side.

streets and backyards until well toward daybreak, and as Dos says "under cover of the continuous rattle of musketry," burglars entered the bank, blew open the vault and got away with ten or twelve thousand dollars.

One of the kittens just got its tail under Julia's rocker, and the whole caboodle are on their way to the wood shed, with the kiddies following mournfully. Now, maybe I can think of something that will interest you more.

This is ideal spring weather. The windows are all wide open and I can almost hear the leaf buds popping. Somehow I can't help but think of all the tree trimming that should have been done last fall and wasn't. They tell me it is bad as well as useless to trim trees when the sap is coming up. New shoots start right out from the "sore." If the trimming is done in the fall or late winter, the "sore" will heal and is not so liable to sprout.

There are two or three little tricks about trimming worth knowing. One is a method of killing sprouts that grow out from soft wood trees, from three to six feet a season. Before they get too large, if they are removed by a blow with a blunt tool, they will not come out again. Limbs up to an inch in diameter may be removed in this manner and not scar the tree. For smaller limbs, a cross arm brace is a handy weapon. I have used a pick handle on various occasions. For larger limbs, the head of the axe answers the purpose. If I were you I would write to the Bureau of Forestry at Washington and get the information it has about tree trimming. It can be had for the asking, and it may be of great value to you in instructing your men in different parts of the country.

Sometimes it is necessary to trim trees when in full leaf. A great many times the trimmings are left hanging in the branches. This not only looks bad, but is harmful to the tree, especially if it is a fruit or a shade tree. The dead branches frequently smother the shoots of live branches or start a disease which will eventually kill all or part of the tree.

You'll probably have tree cutting jobs more or less, big and little. I've seen some that were rather difficult to manage. I remember one case that was not handled properly.

The line was built along the highway at the foot of a steep bluff. The bluff was covered with timber but the soil being shallow, as soon as the trees grew to be ten or twelve inches in diameter, there was nothing to support them as the roots did not hold securely. When a tree fell it generally skidded down the bluff and tore out a section of wire.

They finally arranged to cut all the larger trees and the job was undertaken in the winter. They learned a lot in cutting the first tree. They roped it and snubbed the rope around a tree farther up the hill. They notched the tree on the upper side and sawed from the lower side, pulling the tree with the rope. The result was that when the tree slipped off the stump onto the frozen ground, the rope went slack, and the tree started down hill, butt first, snapping the rope, taking down the line and blocking the road for a couple of hours. The mistake was in using a rope. What they did afterwards was to use guy strand with two clamps at each end.

I know of another case where an accident resulted from underestimating the weight of a sycamore tree. This was a group of bad ones. One of them was unusually so. It stood like shown in the sketch, and measured about four feet in diameter at the butt.

There was a line on each side of the road and both companies had men on the job. The tree leaned at an angle to the line and an attempt was made to swing it and have it fall parallel to the wires. The plan was about like I have indicated in the drawing. Two guy strands were attached as near the top of the tree as was thought necessary. Two sets of three-sheave blocks were used, one on each guy, and to these were attached two sets of two-sheave blocks. Everything was made taut and the men began sawing, of course on the field side of the tree, knowing the saw would bind on the other side. You can almost guess the result. The last sketch shows it.

The tree wiped out both lines, and it took nearly a day to cut away enough so the wires could be replaced. Three of our gang were sent to help clear up the mess.

There was one other tree quite similar to that one but we took it down in five sections, after trimming it pretty thoroughly.

There is another and quicker way to do such a job and that is to get a piece of Okonite cable or enough waterproof wire to carry the lines, and lay it on the ground. Then take out as much of the line wire as necessary to let the tree fall.

Tweedles, she's most four now, is still mourning because the kittie's tail got pinched, so I'll have to comfort her I guess. Good night. Uncle Dick.

An Odd Ground Trouble.

A very peculiar trouble was recently located and removed on a line in the Salem, N. H., exchange, after considerable difficulty had been encountered, says a writer in the New England Telephone Topics. This line had been coming in grounded at frequent intervals. Each time after the carbons in the office had been replaced, the line would show clear, and a thorough inspection failed to reveal anything. There was one station, however, a little street railway company's waiting room at Canobie Lake Park, which was always locked and could not be tested. It was noticed after a time that this trouble was coming in each time at about 7 o'clock.

Upon a search of the street railway waiting room, the troubleman learned that the night watchman would turn on the electric lights for a minute to see that all was O. K. Upon first throwing the switch the lights would be very dim and then would come on more brightly. It seems that the electric lights were in series on a 600-volt direct circuit and were grounded on a water pipe, as was also the telephone protector. During the winter season this water pipe is removed towards the main, to prevent freezing. When the watchman would throw the switch, there would be a very poor ground return for the lights until the current had returned through the telephone protector and wires to the central office ground.

Investigation of Inductive Interference in California

Railway, Power and Communication Interests Co-operate with Railroad Commission to Gather Practical Data to be Used in Formulating Regulations to Minimize Inductive Effects Common When High Tension Power and Communication Lines are Parallel

A recent issue of the Journal of Electricity, Power and Gas contains information relative to the work being done by the California Railroad Commission in investigating inductive interference. Early in the official life of the present commission, many cases of inductive interference between the power lines and the lines of communication systems were brought up for official settlement. It was found that comparatively little is known accurately as to the quantitative effect of different factors on the disturbances in communication circuits, although a great deal of theory of induction phenomena has been worked out. It was felt that if the question could be discussed at length, some valuable results might be obtained which would assist the commission in determining under what conditions parallels between high tension power lines and communication lines are permissible, and in issuing regulations governing thereafter the construction and operation of such lines in proximity to each other, so that the inductive interferences common to such parallelism could be minimized.

Accordingly the Railroad Commission early in December, 1912, invited companies owning and operating electric power lines and telephone and telegraph lines in California to meet informally and discuss the question of appointing committees representative of the many interests concerned; to form an organized investigating board, which, together with representatives of the commission, should constitute a joint committee empowered by the Railroad Commission to conduct tests and experiments, the results of which should serve as a basis for future regulations of the commission.

The conference met December 16, 1912. Four representatives were selected by the power interests; four by the communication interests; one by the railroad interests; and four were appointed by the commission. At a subsequent meeting, the joint committee was increased by the selection of one more representative of the power interests and one of the communication interests, making a total of 15 members. The committee organized under the name of The Joint Committee on Inductive Interference by the election of a chairman, a secretary and a treasurer; by the appointment of sub-committees on ways and means, finance, transportation, program, and publicity, as permanent committees; and by the appointment of a committee to supervise and to analyze the results of tests.

Assistance from the power, telegraph, and telephone companies in the shape of money contributions and from the railway companies in the shape of transportation for men and apparatus, was requested. All of the companies interested in the work were requested to assist by furnishing such men and apparatus as might be available for the work, and by permitting the committee to use the communication and power lines for tests to be made at such times that they would not interfere with the public service. All parties concerned in the investigation have joined in the most liberal manner to meet these requests.

Already some work had been done by the Pacific Telephone & Telegraph Co. and the Coast Counties Gas & Electric Co. in an investigation of a parallel in Santa Clara Valley. A sub-committee was appointed to complete the work on this parallel, and its jurisdiction was extended over the second proposed series of tests at Salinas.

Since one of the reports of the test committee outlines essentially the method used in making both the first and the second series of tests, the following relative to telephone lines is quoted from it.

The tests on telephone circuits are designed to give quantitative information regarding the total effect of the power lines on the telephone circuits and also regarding the effect of each harmonic in the power system on the telephone circuits.

The tests which are outlined here are those which past experience indicates will most efficiently and completely give the information required.

Preliminary Work.

During the tests all of the circuits on the telephone pole lead will be disconnected from the rest of the telephone system at each end of the exposure in order to obtain definite testing conditions and to avoid the effects of secondary induction from other parallels in the system. As this procedure completely interrupts service over the telephone lead, it will ordinarily be necessary to make the tests at night. Good grounds will be made at the test poles at each end of the exposed section of the telephone line. Two pairs of wires, well insulated and well transposed, will be run from the station where the tests are to be made to the telephone pole line.

Condition Tests.

Two telephone lines will ordinarily be connected in for test at the same time, and where possible these two circuits will be side circuits of a phantom so that these tests may be made at once on two physical circuits and one phantom circuit. The tests will be made on a sufficiently large number of telephone circuits to ensure that an idea has been obtained of the extreme and average conditions of the lead. The tests briefly outlined, are:

1. Tests of the capacity and insulation balance of each telephone circuit.
2. Tests of the total noise induced in the telephone circuits.
3. Tests of the current flowing between the telephone wires and ground on short circuit and of the voltage induced between telephone lines and ground on open circuit.
4. Observations of the voltage from each power line to ground and also of the residual voltage, that is, the vector sum of these three voltages. Observations also of the current in each line wire and of the residual current, that is, the vector sum of these three currents.
5. Resonance analyses of the induction between telephone wires and from telephone wires to ground, and of the above named voltages and currents in the power system.
6. Oscillograms of the voltages and currents in the power and telephone systems mentioned in Item 5.

Conditions of the Power Circuits.

The following is a general outline of the different conditions of the power circuits under which the tests should be made. No attempt has been made to go into details as it is felt that the detailed tests will be modified according to the exigencies of operation and that additional tests will be suggested by the results of the tests here outlined:

1. Tests with the power line cut dead, to determine that under these conditions the signaling circuits are free from disturbances.
2. Tests of the inductive disturbance under normal operating conditions, both light and heavy load.
3. Tests of the effect of different transformer connections on the induction in signaling circuits.
4. Tests of the effect of grounding and opening the neutrals of star connected transformers.

5. Tests of the effect of operation of relief and emergency steam stations.
6. Tests of the effect of charging aluminum lightning arresters.
7. Tests of the effect of switching high tension lines.
8. Tests of the disturbance caused by known residual voltages and currents. In these tests the conductors of the power line involved in a given parallel will be cut dead and a known voltage will be impressed between the three power wires in parallel and the ground. Tests of the effect of unbalanced current will be made by passing a known current through each of the line wires with a ground return.
9. Tests with one line wire grounded. In these tests the method of procedure will probably be to create a ground on one wire when the line is dead and then to switch potential on the circuit.

The sub-committee on program is analyzing information now being sent in by the communication and railroad companies concerning parallels with which they are now experiencing difficulty, and information which the power companies are sending in regarding their systems. With this information it will report recommendations for future tests.

It is hoped that within a year or two valuable results will be obtained which may serve as the basis of recommendations to the Railroad Commission.

It is the intention of the joint committee to furnish to the technical press, from time to time, such information as may indicate to the engineering public and to the corporations concerned, the nature of the work being undertaken and the results obtained in so far as they can be considered to be final.

The object of making such reports is for the benefit of the interested companies and of engineers. It is expected that they will show an interest in the work being done in California by such constructive criticisms and suggestions as will further the work of the joint committee on inductive interference, and that in the end, all sections of the country may profit by the results of their labors.

Annual Meeting of Ontario Company.

At the recent annual meeting of the Temiskaming Telephone Co., Ltd., of New Liskeard, Ont., the following statement of last year's operations was made the stockholders:

REVENUE ACCOUNT.

Year ended December 31, 1912.

INCOME.

Rentals	$21,870.23
Tolls	10,734.54
Sundry rents	120.25
	$32,725.02

EXPENSES.

Maintenance	$ 7,049.83
Operators' salaries	5,191.12
Office salaries	2,030.37
Interest and discount	1,285.82
Printing, stationery and advertising	790.08
Discount on tolls	626.00
Rent	300.00
Taxes	579.38
General expenses	875.59
Insurance	342.92
Directors' fees	100.00
Legal fees	376.68
Postage	224.64
Heating	287.67
Lighting	158.96
Surplus	12,505.96
	$32,725.02

SURPLUS ACCOUNT.

Balance forwarded from 1911	$33,646.75
Dividend No. 4	$ 802.24
Dividend No. 5	802.24
Dividend No. 6	873.42
Dividend No. 7	873.42
Depreciation	8,788.55
Bad debts	218.91
	12,358.78
	$21,287.97
Carried from revenue account	12,505.96
	$33,793.93
Emergeny reserve	25,000.00
Balance at credit of account	$ 8,793.93

BALANCE SHEET.

As of December 31, 1912.

ASSETS.

Plant and equipment	$91,395.77
Building, Liskeard	3,601.25
Building, Cobalt	962.25
Accounts received, tolls	2,226.07
Accounts received, rentals	2,047.34
Accounts received, sundries	970.30
Real estate, Cobalt	1,500.00
Real estate, Liskeard	600.00
Office fixtures	595.09
Horses, wagons, etc	655.16
Tools	434.05
Unearned insurance premium	98.35
Stock on hand	2,418.36
Cash on hand	1,445.10
	$108,949.09

LIABILITIES.

Bills payable	$ 6,500.00
Bonds	9,500.00
Accounts payable	1,807.47
Wages and salaries due	339.82
Accrued interest	278.00
Dividends uncalled for	82.35
Unearned rentals	6,523.52
Subscribed stock	50,124.00
Emergency reserve	25,000.00
Surplus	8,793.93
	$108,949.09

The gross income was $683 above that of 1911; the net earnings were $3,910 below those of the previous year. The total number of stations connected on December 31, last, was 952, as against 874 at the close of 1911. The company paid an 8 per cent. dividend last year.

The following officers and directors were elected for the current year: President, T. McCamus; vice-president, George Taylor; secretary and treasurer, P. R. Craven; A. N. Morgan, A. Ferland, M. J. Malone, E. C. Kingswell and George Warrell.

Appeal from National Sale Decision in England.

Both the National Telephone Co. and the British post office are appealing against the award of the Railway and Canal Commissioners as to the value of the former's system, which was taken over by the post office on the first of the year. The post office is appealing against the allowance of the cost of obtaining subscribers' agreements and the cost of raising capital. The National company is appealing against the whole award, and in particular against the method adopted in the award of calculating depreciation.

In the Rural Line Districts

The Mutual Telephone company of this place are repairing the telephone line this week.—Tick Ridge Item, Albia (Iowa) Republican.

The Home Telephone Co., made a liberal donation of $10 to the prize fund of the Jasper County Boy's corn show this year, but it arrived too late to be included in the published list of donors in the premium list, which was issued last week. It is appreciated by the committee, just the same and will be applied on the many cash premiums offered.—Carthage (Mo.) News.

The city forester has been placed in charge of employes of the telephone and electric companies for the purpose of trimming city trees through which the wires pass.—Medford Correspondence, Boston (Mass.) Monitor.

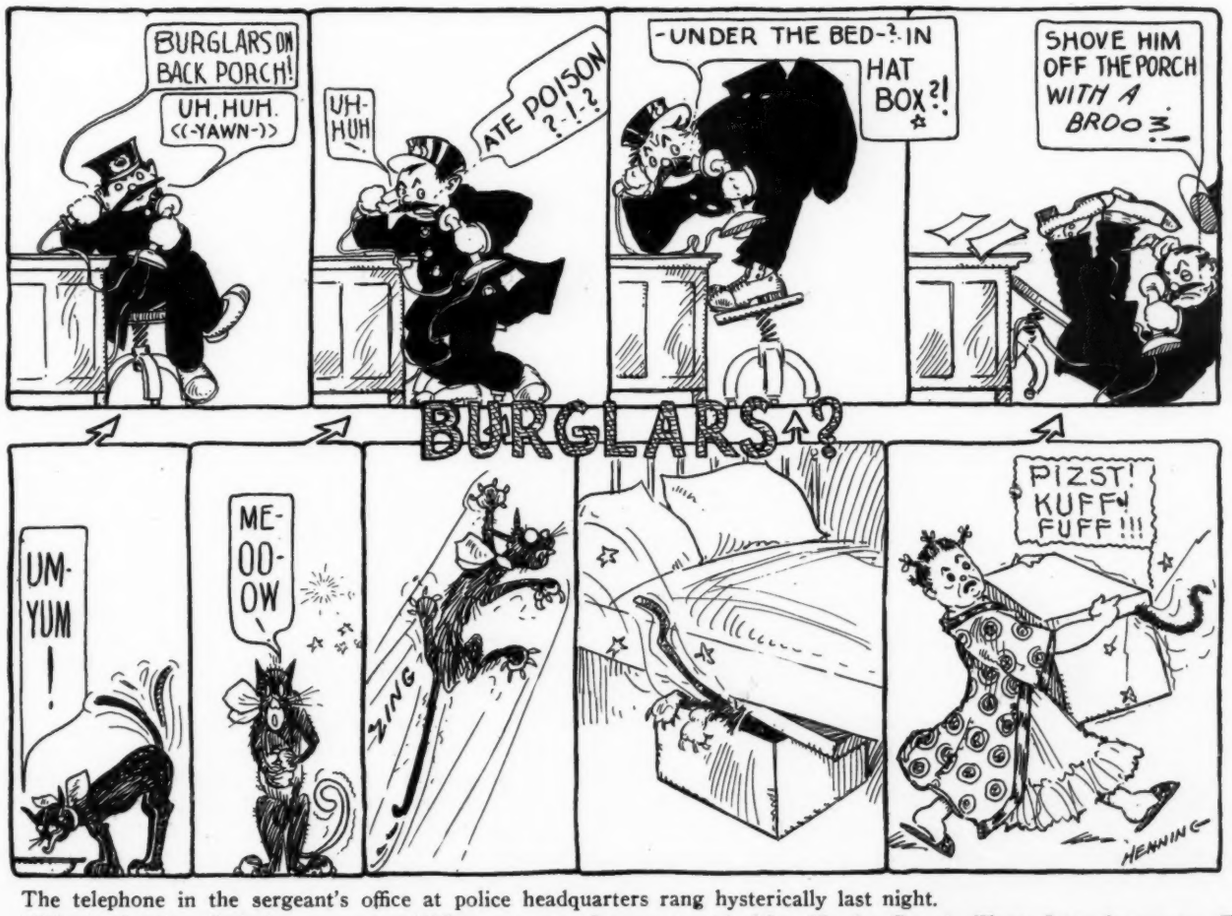
The impaired condition of the telephone system has deprived the writer of numerous news items from patrons who so gratefully contribute to us and which has added much to the pleasure of our readers who all enjoy the Quiver letters, and have given us the items personally—thank you.—Manito Item, Havana, (Ill.) Democrat.

Mr. John Gusman's team became frightened at the cars Friday and ran out of town at a rapid rate, but came in contact with a telephone pole south of the school house and were hung up, breaking the harness and damaging a new surrey badly.—Elvert Letter, Keokuk (Ia.) Gate City.

The Hastings Telephone Company is busy putting in telephones in this vicinity.—Hampton Correspondence, Hastings (Minn.) Gazette.

Bunting has telephone connection with Selbyville. The service was procured within the last few days.—Wilmington (Del.) News.

The Bureau County Independent Telephone company, has moved their central office from over Stetson's store to town hall. This is quite an improvement as it makes more room and is more centrally located, and also a little handier for the boss.—Sheffield Letter, Princeton (Ill.) Record.



The telephone in the sergeant's office at police headquarters rang hysterically last night.

"What's that?" called the sergeant. "Where—at 514 Orange street? Mrs. Charles Conn? There, I can hear now. That ear's better. Mrs. Charles Conn? Yes.—Now, what did you say?—Burglars?—Burglars, did you say?—Oh, I see!—Oh, yes; the back porch. He ate the poison on the back porch? And then got, where?—Where?—Under the bed in a hat box? And now, you say, he's on the front porch?—Yes, yes, I know you ain't afraid of burglars—What?—What would I advise you to do?—why, take the broom and shove him off the porch if he keeps on bothering you—Sure—Well, if you hear anything more, just call me up and I'll have a couple of men up there in five minutes—You'll be all right, though, I guess."

Burglars on the back porch, ate the poison, got under the bed in a hat box, and then the frightened woman is advised to just take a broom and shove him off the porch if he gives any more trouble!!

Well, yes, it would seem that maybe an explanation is in order. It was thus:

Mrs. Conn had put some rat poison on the back porch, intended for rodents, not burglars, and an inquisitive cat had made a meal thereof. Maddened by the pain in his vitals, he had rushed into the house and under the bed and tried to lose himself in a hat box. The frantic struggles of the cat in the box had suggested the ever-present burglar under the bed. Mrs. Conn then discovered what the real disturber of her peace was and had carried the almost-burglar, box and all, to the front porch, where he continued to struggle—and to frighten her.—Macon (Ga.) Telegraph.

Co-operation a Prime Factor in Rural Organization

Story of Formation and Successful Development of a Telephone System by Farmers Without Technical Training or Experience—Written for the Country Gentleman by One of the Participants—Best Equipment Procurable, Metallic Circuit Strongly Advised

By S. A. Hamilton

No one thing which the farmers have done for themselves has had so wide-reaching an effect as the introduction of the telephone. It is estimated that, aside from all other considerations, it has raised the value of farmlands in the sections covered by the lines not less than 1 per cent. and given the farmers quicker and better markets.

The farmers' telephone lines, as they are often built, are not without faults. Usually the aim seems to have been merely to connect the farmers in one valley or along a public road, making as many as 50 subscribers on a line. The resulting confusion, when many persons desired to use the line at the same time, can easily be imagined. Some of these lines are run into the switchboard of the nearest large company for the convenience of the persons on the farmers' line in relaying messages to points on those lines; in other cases there are traffic agreements by which subscribers on farmers' lines can be cut through to subscribers on the main town or city exchanges by the payment of a toll charge. But it is only when the farmers' line has something to offer in the way of equal service that its subscribers can have the use of the connecting line's switchboard the same as that line's own subscribers. And yet this can be and is being done in the case of those lines which are organized on a proper commercial basis aside from their purely co-operative features.

In the south-central part of Pennsylvania there is a beautiful valley, extending from Roaring Spring, in Blair county, to the northern entrance to Loysburg Gap, in Bedford county. Most of this valley lies away from the railroad and is one of the most fertile in the state, the farmers being up-to-date and progressive. The subject of a telephone line had been informally discussed for some months, when finally an informal meeting of half a dozen farmers and business men of the valley was held at Waterside, and those present were unanimously in favor of the project, which at its inception was intended to be the usual farmers' line, with an endless number of subscribers and the usual cheap instruments. The lines were to be built co-operatively by those interested; the poles were to be cut and erected by the farmers along whose farms the lines would run, and they were expected to do other work in addition.

A System of Local Agents.

The business men of the inland towns of Morrison's Cove, as this valley is known, almost to a man farm-bred, were actively interested in the scheme, and on April 3, 1903, an organization was formed and a charter was applied for by one of the organizers. The charter was granted by the governor of the state in July, 1903. The company started with a capital of $5,000 under the name of Morrison's Cove Telephone Co.

There was no trouble in placing the stock; in fact there was from the first a great demand for it, but it was carefully placed in hands which would be of assistance to the enterprise in the way of procuring rights-of-way and releases and of securing subscribers. Every subscriber has from the first taken a personal interest in the company, which I regard as the keynote of its success. By the time the organization was completed and measures were under way to build the line every stockholder in the different sections had worked out his own local problem, and the work of the company was reduced to a minimum.

From the beginning the system of local agents, not regularly appointed but informally recognized, was instituted. These persons kept the management informed of everything affecting the lines or the policy of the company that occurred in their districts. By the time the lines were ready for service these agents, in co-operation with other local stockholders, had large lists of subscribers signed up for instruments. Since I represented this company at the time at one of the most important centers, I am in a position to say that this feature will be found of value to all companies organizing along these lines, though it may be dropped once the lines are well established under good management. The local interest should be kept fostered by an equable distribution of directorships.

The lines were hardly under way when the applications for service poured in so rapidly that it was apparent that the capital stock was too small and on the second day of January, 1904, it was increased to $15,000.

Branching from Morrison's Cove in different directions are other valleys, smaller but just as fertile, in which are other enterprising farmers. These valleys lead to towns some of which are outlets to large farming communities, and some are growing manufacturing places. The business interests were keen enough to see the advantage of having telephone connection with these fertile valleys.

Four Central Offices.

Once the telephones had been installed the farmers in this section became ambitious for further facilities than were at first contemplated. There was an insistent demand for short lines and full exchange service, with rates to suit, and to meet this demand the capital stock was twice increased, first to $25,000 and then to $60,000, at which figure it now stands. This has been sufficient to build and equip the lines better than the average line of the older commercial companies, to install four exchanges complete, and to make the connections at both ends of the territory with connecting lines.

The additional stock issued has mostly been sold at par to the present holders of stock, and it is in such demand that the market price, at the last reported sale, was $160 on a par value of $50 a share. No further increase is contemplated, for it is the policy of the management from now on to make all improvements and supply the maintenance costs from the earnings.

From the beginning the company has been in good hands. The watchword of the company has been to practice every economy consistent with good business practice, but first to make the service good. It has been found that since the lines were built the cost of both equipment and operation has vastly increased, and the rates will have to go up in sympathy with other increases; but the subscribers will then have the best of service at an extremely low rate.

When the lines were built they could have been put up more cheaply had the company adopted the makeshift of a grounded circuit, as is frequently done where a cheap line must be built; but it was here that the wise counsel

of the business men saved the company thousands of dollars ultimately. It is more economical, and better talking-service is secured, to use return copper circuits.

Since deterioration is a serious menace to the prosperity of a telephone line, and since it is continuous from the moment the lines come into use, it necessitates the formation of a reserve or contingent fund from the very start. In addition there must be provision made for accidents, storms being likely to break down the lines. Watch must be kept to avoid personal injury to persons and animals by the lines' falling over roadways and railroad tracks, and a general supervision kept over the whole physical system, which is a continuous expense.

Self-Trained Experts.

The Morrison's Cove Telephone Co. is progressive and its equipment complete. Its service is modern, and when the fact is considered that it was built, equipped, and has always been managed by farmers and business men, country storekeepers and their hired men, it is exceptional. The fear that there must be a great expense for electrical experts has deterred many persons from organizing farmers' telephone lines, but this company has not, at any time, had any one in its service in an executive capacity who could by any stretch of the imagination be called an electrician.

From its inception the active management of the company has been in the hands of two brothers of the president, who made a preliminary study of the subject from such books as were at hand, went over lines already in operation and, being men who have been trained to the use of tools from their boyhood, they quickly grasped the essential facts required to enable them to build a model pole-line, and string it with first-class copper wires, install instruments and place connections on switchboards. There are a few fundamental facts which must be mastered by those who would take active management of a telephone line; and experience will gradually give the required knowledge of the finer points. If the financial end is well taken care of the others will fall into place.

The Morrison's Cove Telephone Co. has four central offices or exchanges, located at Loysburg, Martinsburg, Roaring Spring and Williamsburg. Until recently all the toll service between the system and the connection with the American Union Telephone Co., at Hollidaysburg, was through Roaring Spring and the trunk line via that route. But, the service being overworked, a new trunk line was built from Williamsburg to Hollidaysburg by another route, at an expense of $5,000, which divides the toll work equally between the two toll districts. Connection is made with the connecting foreign line at Hollidaysburg, but a traffic agreement has been made giving traffic rights over the lines of another farmers' line from Hopewell to Everett and Bedford.

This gives the subscribers of this farmers' telephone line a wider field of service than any line of which I have been able to learn, covering 20 towns, large and small, and over 100 square miles of territory. For this service the company charges the following rates: Local residence telephone, restricted to its own lines on the entire system, $12 a year. For local business telephones, $18 a year, and for service which includes the Hollidaysburg and Altoona exchanges of its connecting line, $24 a year. It is the intention of the company to increase these rates in the near future, probably next year, to $15, $24 and $30 respectively, for it cannot maintain the present rates and pay a satisfactory dividend to its stockholders.

Country Girls as Operators.

The service in all the exchanges is continuous, day and night—16 operators, who are paid good salaries and give good service, being employed. In fact these farmers get better results from their telephone girls than many of the larger companies, and their operators are always in demand when they desire to change to positions of trust with the old companies. They are mostly farmers' daughters.

The company has a traffic agreement with its connecting line by which it has unlimited long-distance connections at the same rates as are operative over that company's lines. This agreement is a source of great revenue, for the calls in are more than those out; in fact, without this exceedingly profitable contract I question whether the company would be in the position it is at present, as for several years it as virtually made its subscribers a present of their service, for it costs more than it brings, but the toll-line receipts have helped out. The company had 588½ miles of pole-lines, 982 miles of wires, 120 miles of leased toll-lines under a 999-year agreement, and 678 subscribers on June 15, 1912.

The success of this company from the start has been an object lesson as to what farmers can do when the proper effort is made. The stock is widely held by the farmers in the section in which the company operates, and the attendance at the annual meetings is large; every one takes a personal interest in the company and its affairs, and all "talk right out in meeting" when the annual reports are up for discussion.

The stock has paid dividends varying from 29 to 8 per cent.; they are maintained at this latter figure now in order to build up a good reserve fund for depreciation, and it is expected that this conservative policy will obviate the necessity of issuing any more of the capital stock. The company has no debts except for current expenses, never having had a bond issue. The officers who conduct the business are paid good salaries and devote their entire time to the interests of the company.

Chicago Paper Assails A. T. & T. Practices.

In a recent editorial, the Chicago Examiner considered the annual report of the American Telephone & Telegraph Co. in an exceedingly caustic manner, looking at it in the light of happenings during the recent floods in Ohio. The editorial was, in part, as follows:

"Shareholders in the American Telephone & Telegraph Co. should be in fine feather. The annual report of that concern has just been issued, showing that it declared a dividend of 8 per cent. for last year.

In addition over $6,000,000 was added to the reserves and surplus of the company—nearly 2 per cent. additional to the dividend paid.

If the Bell system, of which the American Telephone & Telegraph Co. is the parent, gave the best possible service there would be less objection to its paying over large dividends. But it doesn't.

The disaster that has fallen upon Indiana and Ohio has emphasized one of those abuses. In such a time of stress that concern has absolutely refused connections or service with Independent lines.

Thousands of Chicagoans have friends and relatives in the flooded district. Anxiously they have tried to reach those dear to them by long distance telephone. And time after time the operator has answered, 'The party asked for has no Bell connection.'

Service of that sort, under the circumstances, is incompatible with 8 per cent. dividends. It is incompatible with the idea that a public utility concern is a public servant. And it is incompatible with the legal status of the company, which is that of a common carrier.

If the company will not of itself form some arrangement with the Independent concerns it should be made to do so by law.

The American Telephone & Telegraph Co. boasts that it has over 50,000 shareholders, all of whom are pleased with that 8 per cent. dividend. But it has a total of nearly 7,500,000 subscribers who want good service at fair pay.

The greater number have rights that are above those of the shareholders to inordinate dividends."

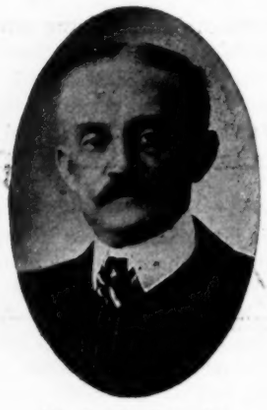
From Factory and Salesroom

A Large Timber Deal.

The Sterling Cedar & Lumber Co., of Monroe, Mich., has sold to the Loud Lumber Co., of Au Sable and Oscoda, its timber holdings in the Upper Peninsula, consisting of the town site of Charles, Mackinaw county, all the dwellings, store, mills and docks with 3,500 acres of standing timber, consisting of saw log timber, telegraph poles, railroad ties, posts, bark and pulpwood.

It will require eight to ten years to cut this timber. The W. C. Sterling & Son Co., is to purchase from the new company all the cedar as it is cut.

Commodore W. C. Sterling, Sr., who has been in active business for the past 45 years will now retire. The Commodore says he has neglected shooting, fishing, sailing for ice boating for more than 45 years and thinks it time he gave these matters proper attention.



W. C. Sterling, Sr.

W. C. Sterling, Jr.

W. C. Sterling, Jr., will continue the management of the cedar pole and tie business established 33 years ago, now known as W. C. Sterling & Son Co., maintaining the large sorting yard at Bay City and other points with the main office at Monroe. The Sterling Cedar & Lumber Co., of which he is vice-president and treasurer, will retain all its holdings in the Lower Peninsula of Michigan. This includes several thousand acres of land and some timber.

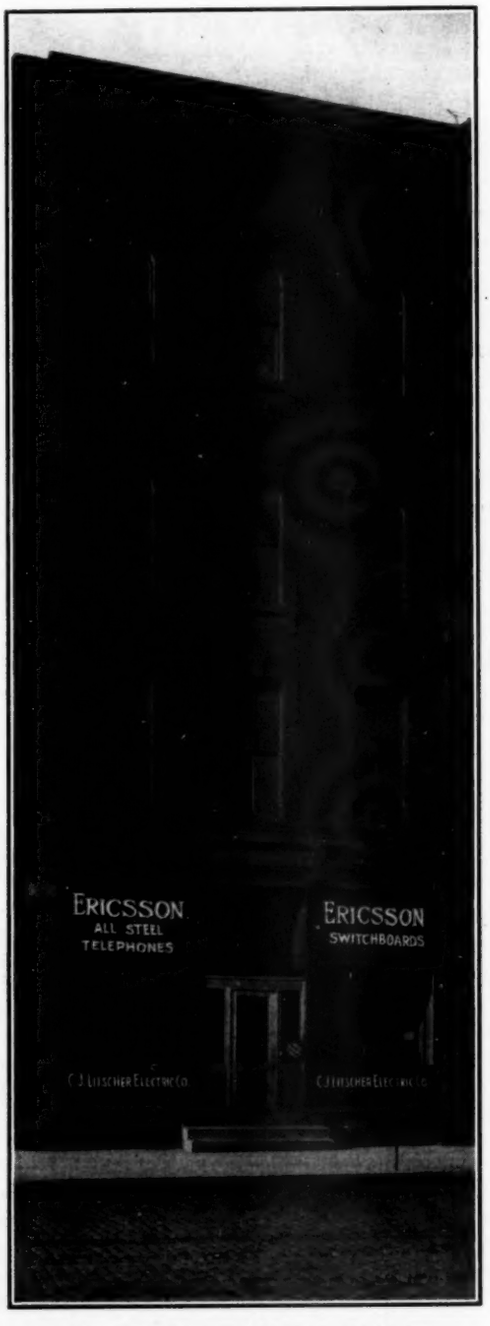
Ericsson Finds More Fame for Milwaukee.

When you think of Milwaukee you generally and naturally think of beer. Of course, it depends somewhat on whether it's a red hot day in summer or a nice sharp frosty one, when the wind is blowing fifty miles an hour. Probably many people who think of Wisconsin think of it chiefly as the state in which Milwaukee is located, or they think that Milwaukee is the whole darn state—largely depending on the size of their thirst or their past habits.

Telephone men are naturally the exceptions to all rules; not that they never drink beer—although if you are a prohibitionist you may think so if you like—but really, with all due regard for truth, we believe that most telephone men in Wisconsin, no matter what the weather is and no matter what brand they prefer, think of Milwaukee as the home of the C. J. Litscher Electric Co.

There may be, and on second thought there is, a special and particular reason why "Litscher" comes to their minds instead of Schlitz, because, while they can buy only one thing from Schlitz they can buy everything in the catalogue from Litscher, and anyhow Schlitz isn't half as good for the telephone business as good tools, good supplies, good test sets, etc., are. Likewise we really believe that the Wisconsin telephone men can please a lineman better by buying from Litscher than they can by buying from Schlitz.

The C. J. Litscher Electric Co., whose home address by the way is 73 W. Water street, Milwaukee, Wis., is cooperating to make itself and Milwaukee more famous by taking the agency for the "Famous Ericsson Everlasting All Steel Telephones" and also the rest of the "famous" Ericsson line—handmikes, extension bells, test sets, switchboards, battery bells, etc.



Home of C. J. Litscher Electric Co.

You wouldn't normally think of going to an electrical supply house, no matter how complete, to buy things with which to please the ladies, but we know, from many things we have heard, that the Ericsson Operator's Breastplate Transmitter is a real delight to the young lady operators, and they do say that Ericsson's double automatic clearing-

out drop in a switchboard will bring a smile to the most haughty beauty in the operating room. Maybe the Litscher people don't handle candy and flowers, but you just get those hard-working operators of yours some Ericsson breastplate transmitters and head receivers and see if you don't make a hit. If it pleases the girls they will please your subscribers, and of course that's the reason you're in business.

Repeat Orders in the Motor Truck Industry.

It is undoubtedly true that one of the strongest claims of the successful motor truck today is that it has proven its way sufficiently to warrant its owner placing a repeat order for the same make when he is in need of trucks again.

It is as axiomatic as two and two make four that a repeat order for a motor truck is never placed unless the original truck made good in every sense that this much overworked vernacular implies. When such repeat orders come from public service corporations and municipalities it is the highest praise possible of the proved performance of a truck.

It is, therefore, with a special pride that the International Motor Co., New York City, chronicles among the recent repeat orders the name of the Baltimore Fire Department, which very recently placed an order for four three-ton high pressure hose wagons, making nine pieces of motor driven fire equipment in service today. The first installment of Mack high pressure hose wagons in the Baltimore Fire Department was made about two years ago. That these combination chemical and hose wagons have proven their dependability in high speed runs over the bad pavements of Baltimore is claimed to be proof of Mack merit in the highest sense of the word.

When R. H. Mack & Co. place a repeat order for four one-ton Mack trucks, after having given them a five-year test (the first Mack truck was put in service by the Macy Co. in 1908), it may fairly be said to show that the severe service of department store deliveries entailing 300 day per year service, with frequent 20-24 hour periods of operation in emergencies.

When the Philadelphia Rapid Transit Co., searching the motor truck field with a fine tooth comb investigating and testing motor trucks, decides on three Mack trucks for the high quality of reliability required by trouble or emergency wagons it is asserted to prove that the Mack is the recognized leader of American made trucks.

When the Public Service Corporation, of New York, buys a five-ton, power winch equipped, Mack truck and a three-ton Mack post hole digger and derrick truck, it is again declared to prove that the Mack has been weighed in the balance by the efficient engineers of public service corporations and not found wanting in all the exacting requirements which technical experts demand of the mechanical appliances.

Paragraphs.

THE ALBERT J. COX CO., of Chicago, has prepared a serviceable and convenient little blank book, properly ruled and page indexed, for the use of telephone subscribers who desire to keep within easy reach a list of the telephone numbers most used. The company devotes the covers, inside and out, to mention of some of its specialties.

THE NATIONAL ELECTRIC SPECIALTY CO., of Toledo, Ohio, exhibited its Vac-M lighting arrester at the Railway Appliance Show, recently held in Chicago. Messrs. Greene and Chapman, who were in attendance, reported that the railway telephone men manifested a great deal of interest in the Vac-M.

THE STROMBERG-CARLSON TELEPHONE MFG. CO., of Rochester, N. Y., is mailing to the trade a big folder descriptive of its Code No. 896, Compact Type magneto telephones. This is put up in two colors and carries a minute description of each of the advantageous features of this instrument. Enclosed are private mailing cards to be detached and used in mailing an order to the company.

"HONEST INJUN" is the name of a monthly bulletin put out by the Hendee Mfg. Co., Springfield, Mass., devoted to the exploitation of that company's "Indian" motorcycle and to various matters of interest to their trade. The March number bears a half-tone reproduction of a photograph which completely fills both covers, showing a motorcycle meet, with many "Indians" in evidence. The periodical is handsomely printed, on splendid paper, and is exceptionally well illustrated.

R. S. MUELLER, of Cleveland, manufacturers' agent, issues at frequent intervals "The Cleveland Stock Sheet" of wire, which he handles. Half of this stock sheet is deadly serious. The other half relaxes with some good stories, under the caption, "On the Road." The following is a fair specimen:

"'Twas the night before Christmas"—in Philadelphia—where they don't heat the street cars. A passenger was rowing with the conductor, who insisted on leaving the door open. The passenger shook a letter under the conductor's nose and demanded that he read it.

"I don't want to read your letter. If you don't like the way I run this car, why report me to headquarters."

"Read this letter, read this letter," insisted the angr passenger, still holding the missive aloft, with all eyes in the car focused upon it. And then a small boy in the corner piped up, "Dear Santa Claus, I want a pair of skates."

The passenger sheepishly returned the letter to his pocket, and the row subsided in the laugh that followed.

Operators' Heroic Work at Omaha.

Both the Postal and the Western Union telegraph companies at Omaha, Neb., suffered severe losses during the recent tornado there, says the Electrical World. Lines were down in all directions and messages were accepted only subject to indefinite delay.

A special tribute should be paid to the telephone girls of the night shift at the Webster exchange of the Nebraska Telephone Co. for their heroic work on the night of the tornado. When the storm struck the district supervised by this exchange most of the lamps on the boards flashed up, owing to permanent grounds. When these were removed the girls answered the calls of the rest of the night while their arms were being slashed with flying glass. The public waiting room was meanwhile turned into a hospital, and the operators' retiring room was used as a temporary morgue, with the operators themselves acting as nurses. Major Hartman, in charge of the Fort Omaha hospital corps, attended the patients there.

Three telephones for public use were installed outside of the building with special supervision to avoid confusion of operators. This exchange building was in the center of the worst storm damage, but remained itself untouched except for having all its windows broken. About 550 telephones were out of service in the two exchanges until rehabilitation commenced.

Special construction men were imported from St. Louis, Kansas City and Sioux City to take charge of repairs to the outdoor plant. Pole lines and cables lay strewn around the streets. In places where cables emerged from underground conduits the tornado had pulled out long strands so that the extent of damage to the underground cables is unknown. Cross-arms were left fastened to wires in some instances, while the poles had disappeared. In other places junction boxes only were seen suspended from wires. The telephone company also aided in bringing order out of chaos by advertising in all editions of the local papers asking persons without telephones to leave their addresses with the telephone company so that they could be reached by their friends if desired.

Legal Cases and Decisions

By A. H. McMillan

Mutual Line Clause.

"Twelve of us wanted telephones, so we made arrangements with an established exchange for ten years' service over its lines. We signed a contract to that effect, the exchange manager agreeing to meet us at the city limits and wire in to the board. We ordered through this manager, poles, wire and insulators enough to construct six miles of line. When the material arrived each hauled a twelfth part of the poles and distributed them along the route of the line. We put them up and strung the wire.

When this was done, a meeting was called at which a president, secretary and treasurer were elected. All paid in their part, which was one-twelfth of the entire cost, to one of our number who was chosen to settle with the manager of the exchange; also at this meeting we elected three managers. We failed to adopt a constitution and by-laws, thinking it was verbally understood that the line should belong to the twelve—understand that each man did his twelfth part of the construction work. There was no understanding where he should do this work on the line, and further there was not anything said about individual shares.

Later, by a majority of votes of stockholders, we erected a second wire to accommodate others along the line, and decided they should pay to our treasurer $14 and own one share.

That is where we got into trouble with one stockholder, who takes the ground that he owns the part which is along his land as his individual property. He bought wire and strung it on this part which he claims, at his own expense without consent of any one. When the money was paid in from these new subscribers, it was to be used to put up the second line on the poles already set.

Now, what should we do? Has this man any right to do this, claiming it as his part of the second line? Would we, as we are organized, be considered any company at all? Is it too late to organize anew? What if he refuses to do this and sign the constitution? Would we, under our contract with the exchange, which agrees to give the twelve who signed, service ten years, have any right to cut loose from him and build another line along where he claims?

What should we do, divide it in twelve parts or try and get organized anew so the company should own it?"

The status of your ownership in the telephone line is that of tenants in common. Tenancy in common is the holding of an estate in property by which each tenant has an undivided possession but separate freeholds. That is no one of them is entitled to an exclusive possession of any part of the property, each being entitled to occupy the whole in common with the others. Carver vs. Fennimore, 116 Ind., 236, 239; 19 Northeastern 103. Hence, this man has no right to claim to own any particular part.

As you are organized, you constitute a voluntary association, not a partnership. Meinhart vs. Draper, 112 Southwestern. A voluntary association is a body of persons acting together without a charter, but upon the methods and forms used by incorporated bodies for the prosecution of some common enterprise. Black's Law Dictionary. Such an association is in effect a company, without a corporate organization.

It is not necessary for you to make any new organization, although it is not too late for you to do so, unless this particular member should refuse to take part. Your contract with the exchange would not give you any right to cut loose from him and build another line along side. A mutual company cannot deprive a member of service, except for illegal acts. Hanley vs. Elm Grove Mutual Telephone Co. (Iowa), 129 Northwestern, 807.

We would not advise you to divide your property or to try to organize anew. Merely enjoin him from interfering with the rights of the company in its property.

Validity of Chattel Mortgage.

Creditors of the O. B. Walker Telephone Co. brought suit against it and garnisheed its debtors. The company had given a chattel mortgage to secure a valid debt and also the individual debt of its president. A question arose as to the validity of this mortgage. The Supreme Court of Kansas held that the mortgage was not void as a whole, as a matter of law, but was void if the mortgagee intended in taking it to defraud, hinder, or delay other creditors, on on account of the excess of indebtedness included in its terms.

The court, upon the examination of the evidence, held that the mortgage was given to secure a debt of its president and not a debt of the company; that it was taken with the knowledge of these facts and was not a valid obligation of the company. Greenwood County Bank vs. O. B. Walker Telephone Co., 128 Pacific, 357.

Interference by Induction.

Where a telephone company and an electric railway company operating under city franchises placed their poles and wires upon a street, and the operation of the telephone lines are interfered with by induction or conduction from the higher voltage currents carried on the other company's wires, the railway company is not liable for damages to the telephone company unless it has exceeded its rights; used negligence in its construction; used faulty or improper appliances; or in some way unnecessarily caused injury, even although it might have constructed its wires elsewhere. So held the Supreme Court of Indiana in a suit brought by the Citizen's Telephone Co. vs. the traction company. A judgment against the telephone company was reversed by the appellate court.

The court in deciding the case quoted the following principles regarding electrolysis:

"1. The operation of a street railway in the street, with any incidental inconvenience or damage to objects in the street, is a legitimate use of the street within the purpose of their original dedication, but (a) this principle does not extend to property rights outside the street.

2. Telephone and other companies may not obstruct the operation of street railways.

3. Both telephone and railway companies must exercise their powers with a careful and prudent regard for the other's rights. 4. If the 'ordinary use' of a railway franchise be such as to injure the telephone franchise unnecessarily, the cost of any change necessitated must fall upon the street railway.

5. The railway company is not liable for injury to the lines of the telephone company on the same streets, due to induction or conduction. 6. The railway company is liable for damages inflicted upon the telephone exchange, located upon private property outside of the streets, by conduction. 7. If the telephone company can protect its lines by the adoption of the McCluer device, the cheapest effective remedy for injury by conduction, and capable of being applied alone by the telephone company, it is the right and duty of the telephone company to resort to the device, and it may recover the cost of installing it from the railway company."

Citizens' Telephone Co., vs. Ft. Wayne & S. Ry. Co., 100 Northeastern, 311.

Compensation of President.

The president of a public service corporation, who receives no salary as such, cannot recover for services rendered to the corporation outside of the duties of his office in the absence of an agreement by the corporation, through its directors, to pay therefore, either express or implied. So held the federal court in a recent case. The company went into the hands of a receiver and the president filed a claim for services rendered as general manager and also a claim of preference over mortgage bondholders. No services performed were proved except those owing to the company as its president, and none were shown to have been performed under the express or implied agreement with any other officer of the company. Hence, the claim was disallowed.

There is a rule that, if a public service corporation diverts its income from the payment of current expenses to the improvement of the mortgage property, so that the current expenses remain unpaid when a receiver is appointed, the court may, out of the income accruing during the receivership, apply to unpaid claims for current expenses, the amounts so diverted. It was held in this case that the rule has been limited by so many courts to claims arising within six months before the receivership, that it has become known as the "Six Months' Rule." Title Insurance & Trust Company vs. Home Telephone Co., 200 Federal, 263.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

Personals.

RALPH L. CHAPMAN has resigned his position as manager of the Troy, N. Y., exchange of the New York Telephone Co.

JOSEPH WALKER has been appointed manager of the Wyaconda & Williamstown Telephone Co., Wyaconda, Mo., succeeding Joseph Dieterich, resigned.

HARRY H. BRIGHAM has been elected a director of the American Telephone & Telegraph Co., New York, to fill the vacancy created by the death of Francis Blake.

A. B. HUBBARD, manager of the Hobart, Okla., exchange of the Pioneer Telephone & Telegraph Co., has been promoted to the management of the company's business at Sapulpa.

H. E. RUSSEL, manager of the Murray, Iowa, exchange of the Hawkeye Telephone Co., has been promoted to the management of the Corydon, Iowa, exchange. Harry Marks will succeed him at Murray.

A. A. LOWMAN, superintendent of plant for the Nebraska Telephone Co., has been transferred to the superintendency of the Northwestern Telephone Exchange Co., with headquarters at Minneapolis, Minn.

Obituary.

CHARLES E. WILSON, general manager of the Keystone Telephone Co., of Philadelphia, Pa., of which corporation he was also a director, and also president of several affiliated companies, died Saturday, March 29, at noon, of tubercular pneumonia, at his residence, 4714 Chester avenue, Philadelphia,

Charles E. Wilson.

after an illness of several months. He was 45 years old. Mr. Wilson is survived by his wife and a son, Robert H. Wilson, 11 years old.

The funeral services were conducted at the home, on Sunday, by the Rev. John T. Reeve, pastor of the Fourth Presbyterian Church. The interment, which was private, was made in West Laurel Hill Cemetery.

Mr. Wilson had been connected with the Keystone Telephone Co. since 1900, and was president of the following concerns: Eastern Telephone & Telegraph Co., Camden & Atlantic Telephone Co. and the Eastern Traffic Association of Independent Telephone Companies.

He was born at Danville, Ill., and his early life was spent in the West. As a boy he entered the employ of a railroad and was promoted from one position to another until he became superintendent of the road. He became deeply interested in electrical engineering and was associated with the Missouri Edison Co. in the early days of electric lighting. Subsequently he was connected with the Fort Wayne Electric Co. as general sales manager, after which he became associated with the Siemens Halske Co.

He has for years been prominent in the National Independent Telephone Association, taking an active part in its proceedings.

J. J. MCDONALD, commercial superintendent of the Arizona Telephone & Telegraph Co., Tucson, Ariz., died recently. Mr. McDonald was born in Chicago and was connected with the Chicago & Alton Railroad for many years.

New Companies.

LITTLE ROCK, ARK.—The North Arkansas Telephone Co. has been organized with $5,000 capital stock. The incorporators are: J. N. Ware, W. W. Schogen, T. H. Henley and J. M. Arnold.

FRESNO, CAL.—The Reedley Telephone Co. has been organized with $25,000 capital stock. The incorporators are E. W. Crosby and D. C. Krehbiel, of Reedley; Dr. G. A. Therker, of Livermore; F. A. Baikin, of Dinuba, and Ira Dick, of San Francisco.

SMYRNA, DELA.—Articles of incorporation have been filed by the Seversons's Rural Telephone Co., with $10,000 capital stock. The incorporators are: Jefferson D. Scout, Mark M. P. Scout, James L. Jackson, Archie McClain, George W. Mattiford, Theodore Mannon, Edmund George, John W. Ford, Clarence Ford and Matthew V. Ford, all of Smyrna, Del.

BLOOMINGTON, ILL.—The Washington Home Telephone Co. will make extensive improvements to its system in this city.

OTTAWA, ILL.—The United Telephone Co. is planning to make extensive improvements in this city.

ROCKFORD, ILL.—The Rockford Home Telephone Co. is considering the erection of a new office building in this city.

CARTERSBURG, IND.—The Cartersburg Telephone Co. has been organized with $1,250 capital stock. The incorporators are: L. Bourbon, J. S. Haworth, H. E. Quinn and others.

REELSVILLE, IND.—Articles of incorporation have been filed by the Reelsville Telephone Co. with $3,000 capital stock. The incorporators are: G. R. Huffman, J. A. Rightsell and C. A. Knight.

KEOKUK, IOWA.—Articles of incorporation have been filed by the Keokuk Telephone Co. with a capital stock of $480. The incorporators are: C. J. Johnson, W. S. White, I. O. Sims, Adams Seabold, Emil Gabel and W. H. Wyatt, Jr.

SCANDIA, KANS.—The Republic County Telephone Co. has been incorporated with $24,000 capital stock. The incorporators are: A. Rasmussen, N. A. Westeine, Rudolph Moe, Geo. Candle, Lester Williams, H. A. Paulsen, P. P. Hammer, L. J. Larson, Earl Eastveldt, all of Scandia.

BOSTON, MASS.—The New England Telephone & Telegraph Co. is planning the erection of two new exchange buildings at Back Bay and Roxbury, to be ready for use in about a year. The estimated cost of the Roxburg exchange is $300,000 and of the Back Bay exchange $500,000.

LANSING, MICH.—The Blue Lake Independent Telephone Co. has been incorporated with $990 capital stock.

TURNER, MICH.—The Iosco & Aranac County Telephone Co. has been incorporated to operate in and about this city.

BINGHAMTON, N. Y.—Articles of incorporation have been filed by the Fuller Hollow Telephone Co., with $2,000 capital stock. The incorporators are: Arthur J. Ruland and S. C. Stone, of Binghamton; Delmar Stark, George M. Ruland, Charles A. Morris and Michael G. Martin, of Vestal; and Charles W. Fetherolf, New York.

GRIFFIN CORNERS, N. Y.—The Fleischmann Telephone Co. has been incorporated with $25,000 capital stock. The incorporators are: C. V. Spriggs, Lillian T. Spriggs, O. H. Todd, Louise M. Todd, Sarah C. Todd, G. A. Speenburgh and A. H. Todd.

VESTAL, N. Y.—The Fuller Hollow Telephone Co. has been organized with $2,000 capital stock. The incorporators are: Arthur J. Ruland, Binghamton, N. Y., George M. Ruland, and Charles A. Morris, both of Vestal, N. Y.

MOSCOW, TENN.—The Moscow Telephone Co. has been incorporated by the following: J. H. Baldwin, H. B. Sadler, J. K. Willburn and H. M. Boswell.

COSMOPOLIS, WASH.—The North River Telephone Co. has been incorporated with a capital stock of $2,500.

Construction.

OZARK, ARK.—The Home Telephone Co. is planning to make extensive improvements in this city.

HAMMOND, IND.—The Chicago Telephone Co. will build a new exchange building in this city, to cost about $15,000.

OSKALOOSA, IOWA.—The Home Telephone Co. will spend $8,000 in adding 200 new lines to the board capacity and in reconstructing toll lines.

MCPHERSON, KANS.—The McPherson Telephone Co. is planning to build a line between Little River and Hillsboro.

MOUND VALLEY, KANS.—The Mound Valley Telephone Co. will make extensive improvements to its system.

PIKEVILLE, KY.—The Eastern Kentucky Telephone Co. will construct lines to Greasy Creek and Knox Creek; also a line from Sidney to McVeigh, a distance of 12 miles.

WHITESBURG, KY.—The Whitesburg Telephone Co. will extend its lines to Hindman, a distance of 20 miles. Address A. Q. Ramey, manager.

DULUTH, MINN.—The Zenith Telephone Co. will make extensive improvements in this city.

SYRACUSE, NEB.—The Lincoln Telephone & Telegraph Co. will make extensive improvements in this city, including the installation of a new switchboard.

BARNEY, N. D.—H. E. Hanson is planning to construct a telephone line in this town, with about 30 telephones.

CINCINNATI, OHIO.—The Cincinnati & Suburban Bell Telephone Co. will build a new 12-story exchange building in this city, cost of which is estimated at $600,000.

ABERDEEN, S. D.—The Dakota Central Telephone Co. is planning to erect a new exchange building at Watertown, S. D., to cost approximately $20,000.

JACKSON, TENN.—The Jackson Home Telephone Co. is planning to rebuild its entire system in this city and to erect toll lines to Trenton, Milan, Humboldt and other places.

CARLSBAD, TEXAS.—The San Angelo Telephone Co. will erect a new exchange building in this city.

WACO, TEXAS.—The Brazos Valley Telephone Co. will make extensions and improvements in this city, the cost estimated at about $100,000.

ANTIGO, WIS.—The Antigo Telephone Co. has decided to expend nearly $20,000 in adding new equipment.

PINEDALE, WYO.—The Mountain States Telephone & Telegraph Co. will erect a handsome new office building in this city.

NINGPO, CHINA.—The electric light company in this city is said to be contemplating the establishment of a telephone system in this city.

PARIS, FRANCE.—The French Post & Telegraph authorities have decided upon the erection of a large new telephone exchange in this city, on the site of part of the old Cherche Midi Military Prison.

Financial.

OZARK, ARK.—The Home Telephone Co. has declared an annual dividend of 15 per cent.

POMONA, CAL.—The Pomona Valley Telephone & Telegraph Union has applied to the railroad commission for permission to issue $200,000 in bonds, for the purpose of making extensions.

IVESDALE, ILL.—The stockholders of the Farmers' Mutual Telephone Association will hold a meeting to vote upon a proposition to increase the capital stock from $5,000 to $8,000.

BERNE, IND.—A 6 per cent. dividend was declared at the annual meeting of the Union Telephone Co.

FRANKTON, IND.—The Farmers & Citizens Telephone Co. has increased its capital stock $10,000.

FRANKTON, IND.—The Farmers & Citizens Telephone Co. has increased its capital stock from $10,000 to $20,000, for the purpose of making improvements to its system.

GREENCASTLE, IND.—The Greencastle Local Phoenix Telephone Co. has increased its capital stock to $92,000. This company will extend its lines over a number of adjacent counties.

TIPTON, IND.—The Tipton Telephone Co. has voted to increase its capital stock from $10,000 to $75,000, for the purpose of repairing and extending its lines. B. L. Shaw is secretary.

BOONE, IOWA.—A 3 per cent. dividend has been declared by the Boone County Telephone Co.

GRISWOLD, IOWA.—The Farmers' Mutual Telephone Co. has declared a 10 per cent. dividend.

OAKLAND, IOWA.—The Botna Valley Farmers' & Merchants' Telephone Co. has increased its capital stock from $15,000 to $17,000.

HARLAN, KY.—The Harlan Telephone Co. has changed its name to the Harlan Home Telephone Co. and increased its capital stock from $5,000 to $10,000.

MILFORD, MICH.—The Milford Home Telephone Co. has been authorized by the state commission to increase its capital stock from $10,000 to $15,000, for the purpose of purchasing the Michigan State Telephone exchange in this city.

FAIRMONT, MINN.—The Fairmont Telephone Co. has voted a 12 per cent. dividend.

OTISVILLE, MINN.—The Scandia Marine Telephone Co. has declared an 8 per cent. dividend.

HARLOWTON, MONT.—The Meagher County Telephone Co. has increased its capital stock to $25,000 and has also voted an expenditure of $2,000 for a new switchboard.

CHAPMAN, NEB.—At the annual meeting of the Chapman Telephone Ass'n a dividend of 10 per cent. was declared.

DANBURY, NEB.—The Beaver Valley Telephone Co. has declared a 6 per cent. dividend, available after September 1, 1913.

LINCOLN, NEB.—The Garfield Telephone Co. has been given authority to issue $2,000 in bonds for the purpose of erecting a new central building and to extend its business.

DUNKIRK, OHIO.—The Citizens Telephone Co. has increased its capital stock from $10,000 to $25,000.

HAMMON, OKLA.—The Hammon Central Telephone Co. has increased its capital stock from $3,000 to $6,000.

WINDSOR, PA.—The Windsor Rural Telephone Co. has declared an 8 per cent. dividend.

DEL RIO, TEXAS.—The Del Rio & Western Telephone Co. has increased its capital stock from $80,000 to $100,000.

UNIONTOWN, WASH.—The Uniontown Telephone Co. has declared a 30 per cent. dividend.

CHIPPEWA FALLS, WIS.—The Chippewa County Telephone will issue $75,000 worth of preferred stock and $75,000 common stock, for the purpose of installing the automatic system in Eau Claire and in this city.

CUMBERLAND, WIS.—The McKinley Farmers Telephone Co. has declared a dividend of $2 per share.

PLYMOUTH, WIS.—The Plymouth Telephone Co. has declared a 5 per cent. dividend.

WAUSAU, WIS.—The Wausau Telephone Co. has declared an 8 per cent. dividend.

Franchise.

HOPKINSVILLE, KY.—The Christian Fiscal Court will offer a telephone franchise for sale on March 3, to operate a telephone system in this city.

BIWABIK, MINN.—The village council has granted the Biwabig Telephone Co. a franchise to operate in this city.

COLVILLE, WASH.—The Arden Telephone Co. has petitioned the county commissioners for a franchise to operate a telephone system in this city.

Underground.

LEWISTON, IDAHO.—The Pacific Telephone & Telegraph Co. is planning to lay several miles of additional cable in this city.

CHAMPAIGN, ILL.—The Central Union Telephone Co. will place underground cables in this city.

JACKSONVILLE, FLA.—Edward Lyle, right of way agent for the Southern Bell Telephone & Telegraph Co., has asked the county commissioners permission to extend the underground system beyond the city limits.

LAKE CITY, MINN.—The Dwelle Telephone Co. will place its wires underground in the business section of this city.

CRANFORD, N. J.—The New York Telephone Co. will place the wires running through town in underground conduit.

SYRACUSE, N. Y.—The New York Telephone Co. will do considerable underground construction in and about this city.

POTTSTOWN, PA.—The Bell Telephone Company of Pennsylvania is planning to place its wires underground, in this city.

Miscellaneous.

DURKEE, ORE.—The Express Telephone & Telegraph Co. has filed certificates of dissolution.

IMLAY CITY, MICH.—The Mutual Telephone Co. has bought out the exchange of the Michigan States Telephone Co. in this city.

TEXARKANA, TEXAS.—The Texarkana Telephone Co. has bought out the property of the Southwestern Telephone & Telegraph Co. in this city, and also at Clarksville, Texas.